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SAN DIEGO STATE COLLEGE

Catalog and Announcement Of Courses

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UNIVERSITY OF ILLINOIS

THE GREAT SEAL OF THE STATE OF CALIFORNIA
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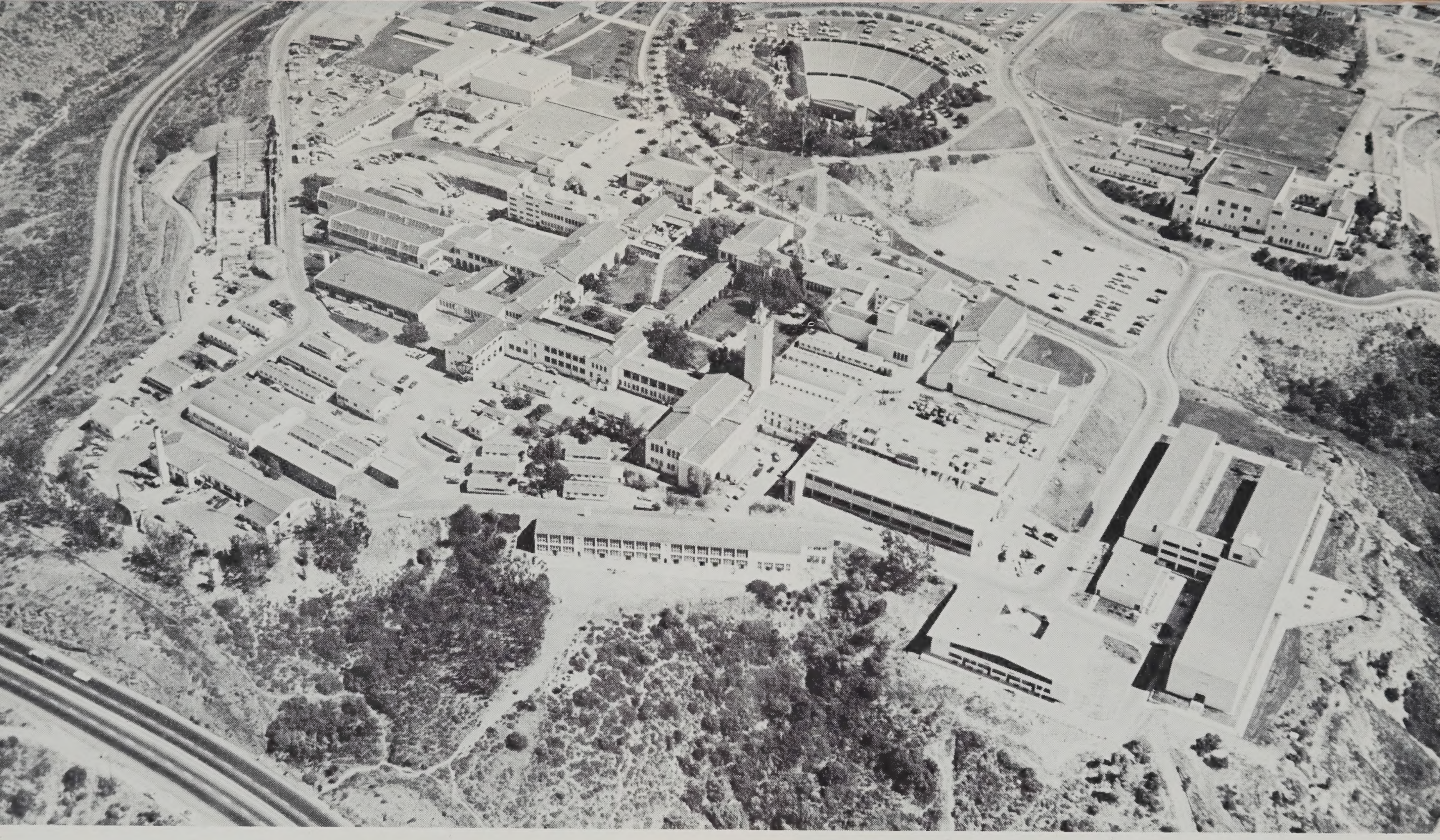
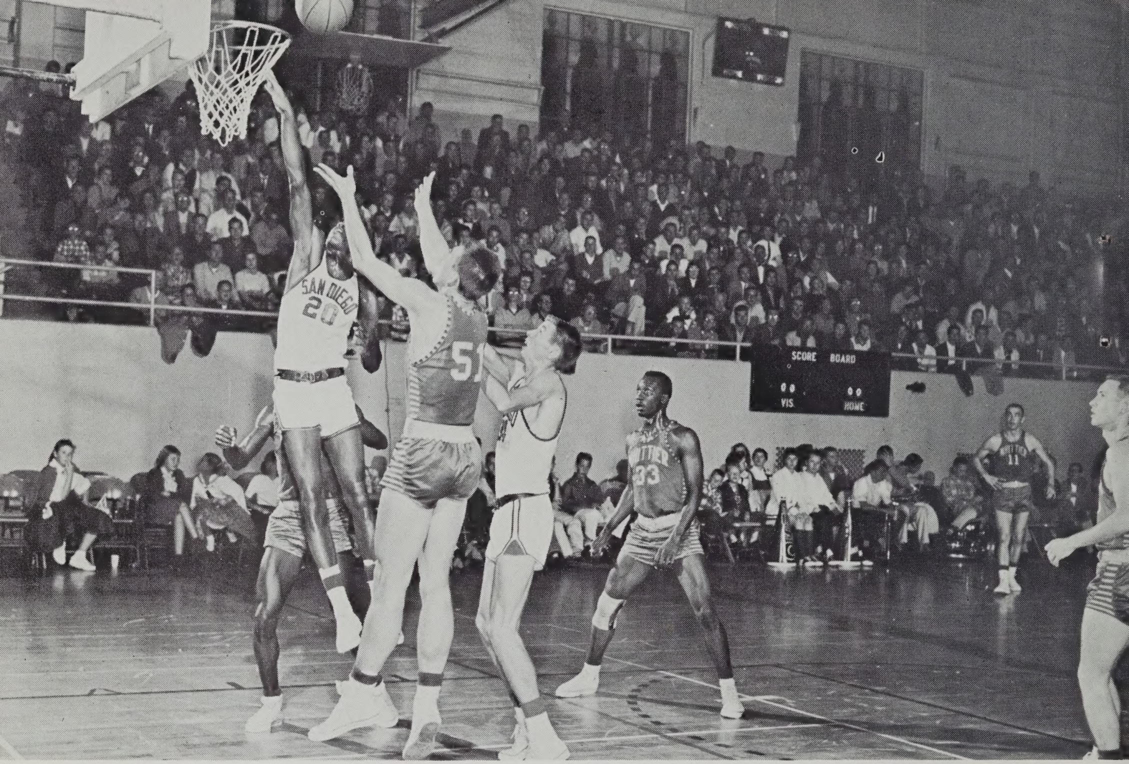


Aerial view of San Diego State's 303-acre campus. At lower right is a 102,000 square foot Humanities-Social Sciences building. A 90,000 square foot Chemistry-Geology building is under construction at the far left.


SAN DIEGO
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SCORE BOARD
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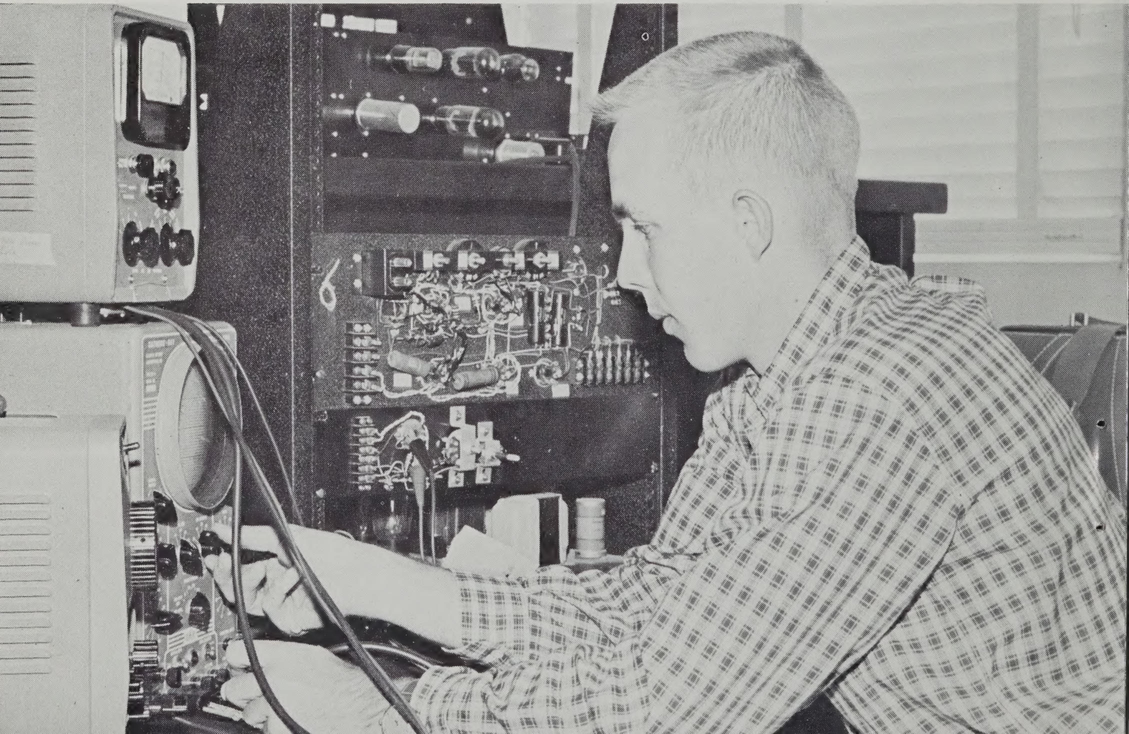
HOME

▲ San Diego State competes on an intercollegiate level in nine sports: baseball, basketball, cross country, football, golf, gymnastics, tennis, track, and wrestling.

▼ Programs in engineering and the physical sciences, on both undergraduate and graduate levels, attract large numbers of San Diego State students.



▲ *San Diego State's sunny quad, scene of informal, between-class gatherings. More than 9,000 students now attend the growing institution.*

▼ *Outstanding musical curricula at San Diego State attract students from many sections of the Country. The scene below shows a 400-voice choral group performing Handel's Messiah. Locale is in the gymnasium to accommodate the large audience.*

▲ *Main arch—typical of the campus' Spanish-Moorish architecture. San Diego State, founded in 1897, is the oldest collegiate institution in the region.*

▼ *A complete elementary school is located on the campus as part of the teacher education program. Although San Diego State is a full liberal arts institution, one of its major responsibilities is preparation of students for the teaching profession.*

Catalog

and

ANNOUNCEMENT OF COURSES

VOLUME 46

APRIL, 1959

SAN DIEGO STATE COLLEGE

SAN DIEGO, CALIFORNIA

DEPARTMENT OF EDUCATION OF THE STATE OF CALIFORNIA

ROY E. SIMPSON	Superintendent of Public Instruction and Director of Education
J. BURTON VASCHE	Associate Superintendent; Chief, Division of State Colleges and Teacher Education
DON YOUNGREEN	Assistant Chief, Division of State Colleges and Teacher Education

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THOMAS L. PITTS	Los Angeles

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President, San Diego Branch, American Association of University Women

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President, San Diego State College Alumni Association

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President	Malcolm A. Love
Assistant to the President	Arvid T. Johnson
Vice President	Ernest B. O'Byrne
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Coordinator of Audio-Visual Services	James S. Kinder
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Dean of Admissions and Records	Melvin A. Anderson
Admissions Counselor	June Warren
Registrar	Margaret L. Gilbert
Dean of Counseling and Testing	Robert T. Gray
Test Officer	Herman Roemmich
Dean of Activities	Margery Ann Warmer
Activities Adviser	Alan S. Mishne
Activities Adviser	Marjorie Wallace
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Housing Director	John M. Yarborough
Placement Officer	William M. Kidwell
Graduate Manager	Richard H. Thomas
Business Manager	Selwyn C. Hartigan
Accounting Officer	Donald G. Parker
Chief of Maintenance	Timothy V. Hallahan
Personnel Officer	Carey D. Folger
Administrative Assistant	Carolyn E. Kessler
Equipment and Materials Coordinator	Lois A. Boyd

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(Including Chairmen of Divisions and Departments)

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Business Law, Real Estate, and Insurance Department	Robert K. Castetter
Management Department	David W. Belcher
Marketing Department	Gerald K. Sharkey
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Secondary Education	E. Glen Fulkerson
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Recreation Department	Frank L. Scott
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Zoology Department	Andrew C. Olson
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Geology Department	Baylor Brooks
Industrial Arts Department	Kenneth Phillips
Mathematics Department	Lester G. Riggs
Physics Department	Lester L. Skolil
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Geography Department	James W. Taylor
Journalism Department	DeWayne B. Johnson
Political Science Department	Donald B. Leiffer
Sociology-Anthropology Department	Bernard C. Kirby
Coordinator of Public Administration	W. Richard Bigger

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FEES

FEES PAYABLE AT TIME OF REGISTRATION

Regular students (carrying more than six units):

Materials and service	$22.00
Student activity fee	8.00
Auditors pay same fees as students carrying courses for credit.	
Total required fees	$30.00

Limited students (carrying six units or less):

Materials and service for one, two, or three units	9.00
Materials and service for four, five, or six units	15.00
Auditors pay same fees as students carrying courses for credit.	

Nonresident Tuition (in addition to fees required of resident students):

Nonresident student enrolled for 15 units or more	90.00
Nonresident student enrolled for less than 15 units, or fraction thereof (per unit)	6.00

For fee-paying purposes, zero unit courses are counted as one unit.

MISCELLANEOUS FEES

(Fees payable when service is rendered)

Change of program	1.00
Failure to meet administratively required appointment or time limit	2.00
Late registration	2.00
Transcript of record (first copy free)	1.00
R. O. T. C. deposit (unexpended portion is refundable)	10.00
Organ practice	10.00
Loss or damage of equipment and library books	Cost
State teaching credentials (each credential)	4.00

REGULAR SESSION FEE REFUNDS

Materials and service fees:

To be eligible for partial refunds of materials and service fees, a student withdrawing from college must file an application with the Business Office not later than 14 days following the day of the term when instruction begins: and provided, further, that the amount of $2 shall be retained to cover the cost of registration.

Nonresident tuition:

Tuition paid for a course scheduled to continue for an entire semester may be refunded in the following amounts if application therefor is received by the Business Office within the following time limits:

Time Limit	*Amount of Refund*
(1) Before or during the first week of the semester	$6 per unit
(2) During the second week of the semester	$5 per unit
(3) During the third week of the semester	$4 per unit
(4) During the fourth week of the semester	$3 per unit
(5) During the fifth week of the semester	$2 per unit
(6) During the sixth week of the semester	$1 per unit

The late registration fee is not refundable.
The Business Office should be consulted for further refund details.

SUMMER SESSION FEES

Tuition, each session	(per unit)	$9.50
Activity fee (required):		
Term I		2.00

EXTENSION COURSE FEES

Extension course fee	(per unit)	8.50

EXEMPTIONS

Students under Public Law 16, 346, 894, California state veteran, or state rehabilitation programs will have fees paid for tuition and materials and service under provisions of these respective programs.

VETERAN ALLOWANCES

Allowances for subsistence begin on the date the Business Office clears for payment of fees, or effective date of VA authorization, whichever is later, except that veterans clearing the Business Office on the regular registration days will be certified for subsistence beginning with the first day of the registration schedule.

FEES SUBJECT TO CHANGE

Fees are subject to change by law without advance notice.

CALENDAR 1959-1960

SUMMER SESSIONS, 1959

Term I (6 weeks) June 29-August 7
Term II (3 weeks) August 10-28

FALL SEMESTER, 1959-1960

July 11, August 8 or 22	Admissions tests for entering undergraduate students. Application for admission to the college must be on file before reservations for the tests can be made. Applicant must make test reservation at least one week before date of the test. College aptitude and reading comprehension tests for freshmen, 8.15 a.m.-12 noon. College aptitude test for advanced standing transfer students, 1.15 p.m.-3.45 p.m.; and writing competency test for students transferring with 45 units or more, 3.45 p.m.-5 p.m.
September 14	Admissions tests (continued) for advanced standing undergraduate transfer students: College aptitude test, 1.15 p.m.-3.15 p.m.; writing competency test for students transferring with 45 units or more, 3.15 p.m.-4.30 p.m.
August 14	Last date for filing application for admission to the fall semester.
August 22	Last date for freshmen to take admissions test.
September 10	General Culture test, required of all transfer students who are expecting to begin professional education courses for secondary school credentials in fall semester. 8.30 a.m.-12 noon. Offered again October 3.
September 12	Fundamentals test, required of all transfer students who are expecting to begin professional education courses for a general elementary or kindergarten-primary credential in the fall semester. 8.30 a.m.-12 noon. Offered again September 24.
September 14-15	Testing and advising program for new students.
September 15	Mathematics placement test (algebra): 8.15 a.m.-10.30 a.m. Required of all entering students expecting to enroll in any of the following courses in the fall semester: Mathematics 3, 4, 40, 50; or Economics 140.
September 16-18	Registration and enrollment in classes. (Students registered in the Evening Program only, consult the schedule in the Evening Program Bulletin for full information.)
September 18	Last date of registration for students in the regular day program. (Students registering in the Evening Program only, consult the schedule in the Evening Program Bulletin for full information.)
September 19	Registration for Evening Program. For complete information, consult the Evening Program Bulletin.
September 21	Classes begin.
September 22	Assembly for students applying for admission to teacher education. 11 a.m.
September 24	Fundamentals test for general elementary and kindergarten-primary credential candidates. 1.30 p.m.-5 p.m.
October 3	General Culture test for graduates and for candidates for any of the secondary school credentials. 8.30 a.m.-12 noon.

October 5	Last date to apply for refunds.
October 9	Last date for withdrawal from classes without penalty of class standing.
October 9	Last date to file applications for mid-year graduation.
November 6	End of eighth week. Deficiency notices due.
November 11	Holiday—Veterans Day.
November 26-27	Thanksgiving recess.
December 4	Last date for withdrawal from classes for the semester.
December 7	File application for June or summer graduation.
December 12	Admissions tests for entering undergraduate students for the spring semester. Application for admission to the college must be on file before reservations for the tests can be made. Applicant must make test reservation at least one week before date of the test. College aptitude and reading comprehension tests for freshmen, 8.15 a.m.-12 noon. College aptitude test for advanced standing transfer students, 1.15 p.m.-3.45 p.m.; and writing competency test for students transferring with 45 units or more, 3.45 p.m.-5 p.m.
December 16	Last day of classes before Christmas recess.
December 17-January 1	Christmas recess.
January 4	Classes resume.
January 6	Last date for withdrawal from college for the semester.
January 19	Last day of classes before final examinations.
January 29	Last day of the fall semester.

SPRING SEMESTER, 1959-1960

January 4	Last date for filing application for admission to spring semester.
January 9	Admissions tests for entering undergraduate students. Application for admission to the college must be on file before reservations for the tests can be made. Applicant must make test reservation at least one week before date of the test. College aptitude and reading comprehension tests for freshmen, 8.15 a.m.-12 noon. College aptitude test for advanced standing transfer students, 1.15 p.m.-3.45 p.m.; and writing competency test for students transferring with 45 units or more, 3.45 p.m.-5 p.m.
January 30	Fundamentals test, required of all transfer students who are expecting to begin professional education courses for a general elementary or kindergarten-primary credential in the spring semester. 8.30 a.m.-12 noon. Offered again February 11.
February 1-2	Testing and advising program for new students.
February 1	Admissions tests for advanced standing undergraduate transfer students: College aptitude test, 1.15 p.m.-3.15 p.m.; writing competency test for students transferring with 45 units or more, 3.15 p.m.-4.30 p.m.
February 1	Mathematics placement test (algebra): 8.15 a.m.-10.30 a.m. Required of all entering students expecting to enroll in any of the following courses in the spring semester: Mathematics 3, 4, 40, 50, or Economics 140.
February 2	General Culture test, required of all transfer students expecting to begin professional education courses for secondary school credentials in the spring semester. 8.30 a.m.-12 noon. Offered again March 12.

February 3-5	Registration and enrollment in classes. (Students registering in the Evening Program only, consult the schedule in the Evening Program Bulletin for full information.)
February 5	Last date of registration for students in the regular day program. (Students registering in the Evening Program only, consult the schedule in the Evening Program Bulletin for full information.)
February 6	Registration for Evening Program. For complete information, consult the Evening Program Bulletin.
February 8	Classes begin.
February 9	Assembly for students applying for admission to teacher education. 11 a.m.
February 11	Fundamentals test for general elementary and kindergarten-primary credential candidates. 1.30 p.m.-5 p.m.
February 22	Holiday—Washington's birthday.
February 23	Last date to apply for refunds.
February 26	Last date for filing applications for June or summer graduation.
February 26	Last date for withdrawal from classes without penalty of class standing.
March 12	General Culture test for graduates and for candidates for any of the secondary school credentials. 8.30 a.m.-12 noon.
March 25	End of the eighth week. Deficiency notices due.
April 8	Last day of classes before spring recess.
April 11-15	Spring recess.
April 18	Classes resume.
April 30, May 7 or 14	Admissions tests for students applying for admission to the fall semester. Open to high school seniors in their last semester or to students expecting to transfer from other colleges. Application for admission to the college must be on file before reservations for the tests can be made. Applicant must make test reservations at least one week before date of the test. College aptitude test, 8.15 a.m.-10.45 a.m. Reading comprehension test for freshmen, 11 a.m.-12 noon. Writing competency test for students transferring with 45 units or more, 11 a.m.-12 noon.
April 29	Last date for withdrawal from classes for the semester.
May 1	Founder's Day for San Diego State College.
May 16	Last date for withdrawal from college for the semester.
May 27	Last day of classes before final examinations.
May 30	Holiday—Memorial Day.
June 10	Commencement. End of the spring semester.

1959

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THE COLLEGE

FUNCTIONS OF SAN DIEGO STATE COLLEGE

San Diego State College has these major functions: (1) To aid the student to develop his powers of critical, independent thought and to become aware of the main streams of our Nation's cultural, social, and scientific traditions, (2) To inform the student of the political ideas and ideals that have built our Democracy and to stimulate in him an interest in participation in civic life, (3) To equip young men and women with the knowledge and skills necessary to meet the needs of California and the Nation for competence and leadership in a number of vocational and professional fields.

To achieve these purposes San Diego State College has developed and is improving offerings as follows:

1. Student personnel services to assist the individual student to plan his educational program and to make his college and life adjustments.
2. General and liberal education for students who take work which leads toward the bachelor's degree or to the higher professions through graduate work.
3. Undergraduate and graduate curricula in teacher education for those students who plan to teach, supervise or administer at all levels in California's public schools.
4. Preprofessional curricula for fields such as medicine, dentistry, theology, and law.
5. Four-year curricula in such fields as business, industry, governmental services, homemaking, and social service.
6. Extension courses in appropriate fields.
7. Courses at the graduate level designed to lead to the M.A. and M.S. degrees in a variety of fields.

LOCATION AND ENVIRONMENT

San Diego State is situated on a mesa some eight miles from beach resorts and within a short drive of mountain and desert recreational sites. Industrial plants in the vicinity are engaged in the development of some of the Nation's most advanced research projects. In the surrounding community, an active cultural program includes musical and theater work, a noted fine arts display and exhibits in anthropology, natural history and archaeology. Throughout the area is found evidence of San Diego's civic pride in its geography, cultural activity, and economic growth. The location and environment of the college make San Diego State a stimulating place for collegiate work and career development.

During its recent years of explosive growth, San Diego State has enjoyed the support of a community alert to its educational needs. To serve a student population of more than 9,000, the institution now has classrooms, laboratories and other facilities covering 700,000 square feet. The facilities and equipment have been planned to serve a broad undergraduate and a constantly expanding graduate program. An additional 600,000 square feet of instructional space will be constructed within the next two years. Buildings under construction or ready for construction include the following: Chemistry-Geology, a large addition to the Physics, Physical Science and Astronomy buildings, a new Men's Gymnasium, Administration building addition, Engineering and Applied Science addition, three Men's Dormitories, two Women's Dormitories, Health Services building addition, and an addition to the Education building.

THE LIBRARY

The library facilities of the college are noteworthy, consisting of over 190,000 volumes and receiving annually more than 1,400 different periodicals selected to meet the requirements of a modern educational institution. These are housed in a new modern building consisting of more than 100,000 square feet of floor space and capable of seating 2,500 readers. Professionally trained librarians are available to render assistance to students and faculty in their reading and reference work.

The Campus Laboratory School library, a collection of over 18,000 volumes, with its equipment and building facilities, makes a valuable contribution to the teaching profession.

FACILITIES FOR THE EDUCATION OF TEACHERS

The college maintains a modern elementary school on the campus where it has developed an extensive program for the education of elementary school teachers. The classroom-laboratory plan which calls for the use of workrooms, the library, and shops, affords unusual opportunities for the induction of students into teaching. By arrangement with the San Diego city and county schools, directed teaching is provided in the elementary and secondary schools.

THE FACULTY

The college faculty numbers over 500 members who have received their advance training in over 100 colleges and universities of the United States or foreign countries. The faculty is distinguished not only in terms of formal education, but also represents a wide variety of practical experience in business, industry, and the teaching profession. Both past and present contributions to publications and research are extensive and impressive. For listings and further details see the directory.

ACCREDITATION

San Diego State College is a member of the Western College Association and the American Association of Colleges for Teacher Education. It is fully accredited by the Western College Association, the National Council for Accreditation of Teacher Education, the California State Board of Education, and is approved by the Veterans Administration for the education and training of veterans.

DEGREES OFFERED

The following degrees are offered by the college: bachelor of arts, bachelor of science, bachelor of education, bachelor of vocational education, master of arts, and master of science.

LIBERAL ARTS DEGREE

The appointment of the Dean of Arts and Science, and the creation of a Council of Arts and Science, representing all divisions of the college, make possible the development of a unified four-year program in the liberal arts leading to the bachelor's degree. Work is in progress to formulate degree requirements, and it is anticipated that a formal statement will be made in the catalog for the year 1960-1961.

CERTIFICATES OFFERED

Certificate programs are offered in public administration, public welfare administration, and industrial management. Requirements for these certificates may normally be completed in the Campus Evening Session Program.

For a description of requirements for the *Certificate in Public Administration* or the *Certificate in Public Welfare Administration*, refer to the Public Administration section of this catalog in the Announcement of Courses. For a description of requirements for the *Certificate in Industrial Management*, refer to Business Administration in the section of the catalog on Announcement of Courses and Programs of Study.

RESIDENCE HALLS

Five campus residence halls, each accommodating 200 students, are under construction. At least one of the residence halls for men and one for women will be ready for occupancy in September, 1959. The three-story buildings are attractively designed and constructed and are fireproof and air-conditioned throughout. Furnishings are particularly well selected to provide facilities for study and comfortable campus living.

Meals for all residence hall students are provided and required in the college cafeteria. Meals are not served, however, during the Christmas recess, the Easter recess, or the recess between semesters. Only two meals are served on Sundays.

For 1959-1960 the total charge per student per semester for campus board and room will be approximately $420, payable a semester in advance. Health service benefits, including hospitalization, are included in this total. A $20 breakage fee, refundable at the close of the college year, is an additional fee.

A waiting list for students seeking residence hall assignments is maintained in the office of the Dean of Activities. Incoming students may have their names entered on the waiting list as soon as they receive from the Dean of Admissions official notice of admission to the college. A deposit of $50 is required at the time of official application and is refundable to a period not later than 30 days before the first day of college registration for the ensuing term.

The college reserves the right to require that unmarried men and women students under the age of 21 who are not living with a parent or guardian occupy campus residence halls or other college-approved dwellings. Any exceptions are made through the office of the Dean of Activities.

Additional information concerning campus housing may be obtained from the office of the Dean of Activities.

VETERANS' EDUCATION

The college has been approved by various accrediting agencies to offer courses for veterans leading to the baccalaureate in numerous fields and to the master's degree and various teaching credentials. In connection with the Personnel Services Center, a veterans' office is maintained on the campus to facilitate registration, aid in the establishment of benefits, afford special counseling services, and serve as an information center.

Although opportunities for veterans' housing are becoming increasingly limited, the college is privileged to make referral of married veterans enrolled as full-time students to city-operated housing projects. Referrals are made through the office of the Dean of Students.

STUDENT HEALTH SERVICE

As a part of the program of student personnel services, the college provides health services for the protection and maintenance of student health. These health services, under the direction of a medical doctor and consisting of a full-time staff, assisted on a part-time basis by several medical specialists, are available to students for consultation, treatment of minor physical difficulties and emergencies, and counsel as to additional proper procedures. Full-time nurses are on duty. During the weeks the college is in session students may obtain appointments with specialists during the hours they are available at the Student Health Service. A student must be currently enrolled for seven or more units of credit to be eligible for other than emergency treatment.

As part of the regular admission procedure, a health statement is required of each student. A form is furnished each student prior to registration for the purpose of recording the results of a physical examination done by the student's private physician. Although the physical examination is not required as part of the admission procedure, it is strongly recommended as a means of compiling a complete health record of the prospective student. Careful attention is given to students undergoing private remedial treatment and to those for whom a modification of study load or amount of participation in physical activities seems advisable. A follow-up procedure is in effect for students who have been urged to consult their family physician for correction of defects found in the examination.

Physical examinations are required of and provided for all teacher education students at time of admission to and graduation from the various educational credential programs. Physical examinations are furnished by the Health Service only to those credential candidates who are applying for a state credential through the college, screened by the college. Physical examinations are also required before students are authorized to participate in the organized program of intramural recreation, or in intercollegiate athletics.

A student health insurance program for those individuals carrying more than six units is currently in effect. This insurance coverage may be purchased at the time of registration.

STUDENT ACTIVITIES

A rich field of extracurricular activities is made possible through the Associated Students. The *Student Handbook*, available at the time of registration, gives information concerning the nature and scope of these opportunities. During the last college year, eight governmental organizations, eight service organizations, 69 departmental and honorary organizations, 14 religious organizations, 15 national fraternities, and 11 national sororities were officially recognized on the campus. Full programs of intramural and intercollegiate athletics are likewise maintained. Inquiries regarding fraternity or sorority rushing should be addressed to the Interfraternity Council or to Panhellenic, San Diego State College. Students are urged to select extracurricular activities carefully in order to receive optimum benefit from group experiences and to maintain continuous records of good scholarship.

PERSONNEL SERVICES CENTER

The college offers the services of a trained staff to students who wish help in the solution of problems which are personal, social, academic, or occupational in nature. It is a program designed to help students gain the greatest possible advantage from their college experience. Agencies and facilities co-operating in the effort to assist students include the student health service; the test office; the reading, writing, and study laboratory; the speech improvement program; the placement and occupational guidance service; the veteran's service; and the counseling service. Students who wish to take advantage of these facilities may do so through the Personnel Services Center.

STATE VOCATIONAL REHABILITATION

Assistance to certain students having physical handicaps or limitations may be available through the Bureau of Vocational Rehabilitation, California State Department of Education. Services available include diagnosis, counseling and guidance, psychological testing, provision of fees, books, and supplies, subsistence and transportation allowances. Restoration services to reduce or remove disabilities may also be provided and can include medical and psychiatric treatment, artificial appliances, hospitalization and allied therapies. Applicants must be residents of California for one year and have a significant disability which interferes with employment. Information is obtainable through the Dean of Counseling and Testing or at the agency offices, 520 E Street, San Diego.

PLACEMENT CENTER

The college provides a centralized placement service in co-operation with the various departments of the college. Students are aided in securing part-time and full-time positions and in obtaining information concerning occupational trends. Liaison is maintained with the Personnel Services Center on matters relating to senior vocational counseling. Staff members maintain constant contact with schools, businesses, and industries.

Going to college is regarded as a full-time job. Students are normally expected to spend in class and study a total of three hours per week for each unit of college work attempted. A normal 16-unit load therefore represents a 48-hour week. Students are strongly advised to take this into consideration before accepting any part-time job.

SPEECH CORRECTION CLINIC

A speech correction clinic for the training of college students in speech correction is held Mondays and Wednesdays during the school year to deal with all types of speech problems, such as stuttering and lisping. It is open for ages from 4½ years to the young adult; however, because of physical limitations, not all who apply are admitted. The cost of materials, not to exceed $1, must be met by the parent or individual concerned. Parents who enroll a child in the clinic must also enroll in Speech Arts E-175, The Role of Parents in Problems of Speech Correction, for two units of credit, offered as an extension course each semester.

ALUMNI ASSOCIATION

The Alumni Association of San Diego State College maintains an office on the campus. Membership in the association is open to former students of the college who were in regular attendance for one or more semesters. Membership is also open to past or present members of the faculty. The association publishes the *Alumni Quarterly*.

SCHOLARSHIPS AND AWARDS

The scholarships and awards available at San Diego State are listed in the back of this catalog, immediately following the section on Announcement of Courses and Programs of Study. Refer to the Index for page numbers.

Each scholarship, which is listed by name, carries a description of qualifications required of the candidate. Need, academic achievement and satisfactory record of personal conduct are definite considerations in the granting of scholarships.

LOANS

Short-term loans are available to students who have attended San Diego State College for at least one semester and who have demonstrated ability to do satisfactory college work. Applicants are considered on the basis of need and ability to repay moneys borrowed by the end of the college semester.

Long-term loans are available in limited amounts to students who are qualified scholastically and who show evidence they need loans to complete their college education.

San Diego State College has applied for participation in the student loan program which is a part of the National Defense Education Act of 1958.

Individuals and organizations have donated money to establish the following San Diego State College Foundation loan funds:

Alumnae Athletic Loan Fund
Colver Waller Loan Fund
Will C. Crawford Memorial Loan Fund
Anna L. Davis Memorial Loan Fund
DeWitt Bisbee Williams Student Memorial Loan Fund
Faculty Dames Loan Fund
Martha Farnum Loan Fund
Dr. Edward L. Hardy Student Memorial Loan Fund
Joan Jennings Memorial Loan Fund
Dr. L. P. Lesley Memorial Loan Fund
The Harvey J. Lewis, Jr., Memorial Loan Fund
Lions Club of San Diego Loan Fund
Maude Holcomb Lydick Loan Fund
W. L. Nida Loan Fund
R. J. Pickard, M.D., Loan Fund
San Diego State College Loan Fund
Dr. Ralph J. Scanlan Loan Fund
Scottish Rite Loan Fund
Laura E. Settle Loan Fund
Thursday Club Loan Fund
Women's Auxiliary San Diego County Medical Association Loan Fund
San Diego Concordia Frauen Verein Loan Fund

Applications for further information on the above listed loan funds may be made through the Loans Administrator in the office of the Dean of Activities.

ADMISSION AND REGISTRATION

GENERAL ADMISSION REQUIREMENTS

Admission requirements at San Diego State College are stated in the California Administrative Code, Title 5, Education, which provides uniform admissions regulations for all California state colleges. These regulations are reprinted below.

APPLICATION FOR ADMISSION

FILING OF APPLICATIONS

File Application for Admission. Applications for admission to the college may be filed during the semester preceding the one in which the applicant expects to enroll. The following forms must be filed with the Admissions Office:

(1) Application for admission (or readmission)
(2) Health history record

These forms may be obtained from the Admissions Office. Letters from applicants signifying intention to enroll will not be considered as applications for admission. The official forms must be filed.

The applicant should consult the calendar in this catalogue for deadlines on filing of applications. Applications received after the final date for filing of applications cannot be processed for admission to the semester immediately following.

FILING OF RECORDS

File Official Transcripts. The applicant must file the following official transcripts with the Admissions Office:

(1) Transcript from high school of graduation or last in attendance (not required of the graduate student who holds a bachelor's degree from an accredited institution, but is required of the student who holds a bachelor's degree from a nonaccredited institution).
(2) Transcripts from EACH college attended (including extension, correspondence, summer session, or evening courses). Graduate students must file transcripts IN DUPLICATE, if they plan to enter the master's degree program.
(3) Photostat or true copy of the military separation form DD-214 (or equivalent) if applicant has had active military service. (Not required of graduate students.)

An official transcript is one sent directly between schools. The applicant must request the school or college to send the transcript to the Admissions Office, San Diego State College. All records or transcripts received by the college become the property of the college and *will not be released nor will copies be made*.

COMPLETION OF REQUIRED TESTS

Take Admissions Tests.

(1) *College Aptitude Test.* This test is required before registration of all entering freshmen and transfer students. Freshmen must complete the test before a notice of acceptance for admission will be sent. Applicants who have previously taken this test for admission to this college need not take the test again. Applicant may obtain a test reservation card at the Admissions Office and must file the card at least one week before the date of the test. Refer to the calendar in this catalog for test dates.
(2) *Writing Competency Test.* This test must be taken before registration by all undergraduate students transferring to this college with 45 units or more of advanced standing. Passing this test or satisfactory completion of designated courses or remedial programs is a graduation requirement for all students. Applicant may obtain a test reservation card at the Admissions Office and must file the card at least one week before the date of the test. Refer to the calendar in this catalog for test dates.

(3) *Reading Comprehension Test.* This test must be taken before registration by all entering freshmen. Since it is scheduled to be given as part of the college aptitude test, a separate reservation for the test need not be made.

(4) *English Test for Foreign Students.* For admission purposes, all entering foreign students whose native language is not English must take this test in place of the writing competency or reading comprehension test. The test will be scheduled by the counselor for foreign students.

Education Department Tests. These tests are required of all candidates for teaching credentials. Refer to the section of this catalog on Admission to Teacher Education and to the calendar for additional information.

(1) *Fundamentals Test.* This test is required of all candidates for the general elementary and kindergarten-primary credentials before admission to teacher education. May be taken before registration by students transferring to this college with 15 units or more of advanced standing. May also be taken during the regular semester. Make a reservation for this test at the office of Elementary Education, Education Building.

(2) *General Culture Test.* This test is required of all candidates for any of the secondary school credentials before admission to teacher education. May be taken before registration by students transferring to this college with 45 units or more of advanced standing. May also be taken during the regular semester. Make a reservation for this test at the Office of Secondary Education, Education Building.

(3) *English Proficiency Test.* This test is required of all candidates for any of the secondary school credentials before admission to teacher education. The test is not given before registration. May be taken during the regular semester by students with 45 units or more of advanced standing. Obtain information and make test reservation at the Office of Secondary Education, Education Building.

(4) *Mathematics Competency Test.* This test is required of all candidates for any of the secondary school credentials before admission to teacher education. The test is not given before registration. May be taken during the regular semester. This test is the same test as the one given to clear the graduation requirement for competency in mathematics which may be taken by any student. Candidates for a secondary school credential must make a reservation for this test both at the Evaluations Office in the Administration Building and at the Office of Secondary Education, Education Building. For date of this test, refer to the Class Schedule.

Mathematics Placement Test. An algebra test required of students before enrollment in any of the following courses: Mathematics 3, 4, 40, 50; or Economics 140. May be taken by entering students before registration. Reservation for the test is not required. Refer to the calendar in this catalog for date of the test. The test may also be taken during the regular semester.

Graduate Aptitude Test. This test is required of all graduate students who intend to enroll in a master's degree program. May be taken before registration. Also given during the regular semester. Reservation for this test must be made at the Graduate Office. Refer to the Graduate Bulletin for full information.

ADMISSION OF HIGH SCHOOL GRADUATES

REQUIREMENTS

An applicant for admission as a freshman must qualify under one of the following provisions:

(1) Be a high school graduate and have earned in the last three years of high school at least seven Carnegie units (14 semester credits) of A or B grade on a five-point scale (exclusive of physical education and military science); or

(2) Be a high school graduate and have earned in the last three years of high school at least five Carnegie units (10 semester credits) of A or B grade on a five-point scale (exclusive of physical education and military science) and attain a score at the 20th percentile or higher on the national norm of a college aptitude test given by the college.

ADMINISTRATIVE CODE

The California Administrative Code, Title 5, Education, provides as follows:

"925. **High School Graduates.** For admission to a state college, a high school graduate, or other applicant who is judged by the appropriate college authorities to possess equivalent preparation, must, as a minimum, meet one of the following:

"a. Have completed the equivalent of seventy semester periods (7 Carnegie units) of course work, in subjects other than physical education and military science, with grades of A or B on a five-point scale during the last three years in high school.

"b. Have completed the equivalent of fifty semester periods (5 Carnegie units) of course work, in subjects other than physical education and military science, with grades of A or B on a five-point scale during the last three years in high school and attained the twentieth percentile on the national norm of a standard college aptitude test.

"An applicant who fails to meet these standards may be admitted, if in the judgment of the appropriate college authorities, he gives promise of being able to succeed in college.

"Admission to a state college shall be limited to the number of students for whom facilities and competent instructors are available to provide opportunity for an adequate college education. The Director of Education after consultation with the president of a state college shall determine the number of students for whom there are available facilities and competent instructors at the college."

NOTE: A Carnegie unit represents course work covering a school-year (or two semesters).

HIGH SCHOOL PREPARATION

Students planning to enter college are urged to consult with their high school counselors in arranging a program that will adequately prepare for more advanced work at the college level in the field of major interest. The following general outline is suggested as a guide to students in selecting courses in preparation for college.

RECOMMENDED HIGH SCHOOL PROGRAM

Subjects	Freshman Year	Sophomore Year	Junior Year	Senior Year
ENGLISH (Four years recommended)	English	English		English
SOCIAL STUDIES (Three years recommended)			U. S. History	Civics
MATHEMATICS	Algebra	Geometry	Advanced Algebra for science majors; recommended for others	Trigonometry and Solid Geometry for science majors
SCIENCE		Life science (Botany, Biology, or Physiology)	Chemistry (with laboratory)	Physics (with laboratory)
FOREIGN LANGUAGE (Three or four years in one language recommended)	Foreign language	Continue the same language	(a) Continue the same language or (b) Begin another language	(a) Recommend continuing same language or (b) Continue the second language
PHYSICAL EDUCATION	P. E.	P. E.	P. E.	P. E.
ELECTIVES	Recommended for all precollege students: typing, art, music, additional social studies, English; for science majors: slide rule, mechanical drawing. Students should enrich the high school program by selecting freely from courses in the fine arts, practical arts, and the humanities. Many students are availing themselves of the opportunity afforded in high school summer sessions to take courses which otherwise could not be included within the regular semesters.			

ADVANCED PLACEMENT EXAMINATIONS

Students may be granted advanced placement and advanced credit up to a maximum of nine semester units, with no more than three units in any one field, providing (a) they have completed high school honors courses and have attained a satisfactory score on the advanced placement examinations, (b) complete their first semester at San Diego State with academic standing in the upper half of their class, and (c) obtain the recommendation of the department in which credit and placement will be granted.

Application forms may be obtained in the office of the Dean of the College and must be filed during the student's first registration. Those interested in this program should indicate at the time they take the advanced placement examinations that the results be sent to the college.

ADMISSION OF NON-HIGH SCHOOL GRADUATES

A person 21 years of age or older who is not a high school graduate may be admitted as a freshman with adult special status, provided that he demonstrates to the appropriate college authorities his ability to profit from college work.

ADMINISTRATIVE CODE

The California Administrative Code, Title 5, Education, provides as follows:

"926. **Adult Special Students.** An applicant who has attained the age of 21 years and is not a high school graduate may be admitted to the state college as an adult special student provided that he demonstrates to the proper college authorities, ability to profit from college work. If such a student completes with a grade point average of 1.0 (grade of C on a five-point scale) or better a program of 24 semester or 36 quarter units of residence work in basic courses leading to a degree, he shall not be required to remove entrance deficiencies."

NOTE: A revision of the grade point system at San Diego State College beginning with the school-year, 1956-57, changed the C grade average from 1.0 to 2.0 (For further information, refer to the section of this catalog on General Regulations).

ADMISSION WITH ADVANCED STANDING

REQUIREMENTS

An applicant for transfer to this college with advanced standing credit from other colleges must meet all the following requirements:

(1) Must have a grade average of C or better (2.0 on the four grade-point scale used at this college) on all college work attempted, including extension and correspondence courses, and must be eligible to return to the last college in which enrolled as a regular student.

(2) Must have earned at least 24 semester units in an accredited junior college, or if transferring with less than 24 units, must also have qualified at the time of leaving high school to meet current standards for freshman admission.

(3) Must report all college work attempted, no portion of which may be disregarded in transferring. An applicant disregarding this regulation would be subject to dismissal from the college.

A student applying for transfer from a nonaccredited college who meets the requirements stated above may be admitted by special action of the Board of Admissions. Transfer units will be provisionally accepted, subject to completion of a minimum of 24 units at this college with a grade average of C or better.

ADMINISTRATIVE CODE

The California Administrative Code, Title 5, Education, provides as follows:

"928. **Students Who Transfer From Accredited Degree Granting Colleges and Universities.** An applicant who has earned credit in accredited degree granting colleges and universities may be admitted to a state college if he meets standards as follows:

"(a) He must have a grade-point average of 1.0 (grade of C on a five-point scale) or better on the total program attempted, or

"(b) He may receive special consideration if he attains the twentieth percentile of the national norm of a standard college aptitude test provided that he must have been in good standing at the last college institution attended, and his previous record must be such that it would not disqualify him in the college to which he seeks admission.

"(c) A student who does not meet the above requirements may be admitted on probation, if in the opinion of the proper college authorities he can succeed in college."

"929. **Students Who Transfer From Unaccredited Colleges and Universities.** An applicant who has attended a nonaccredited college or university may be admitted to a state college if he meets the standards listed above for transfers from degree granting colleges and universities, but credit earned in nonaccredited colleges and universities may be counted toward graduation requirements only after he has earned 24 semester or 36 quarter units with at least a C average."

"930. **Students Who Transfer from Junior Colleges.** An applicant who has earned credit in a junior college may be admitted to a state college if he meets the standard previously listed in this article, except that in case the applicant was ineligible for admission to a state college on the basis of his high school record he must, as a condition to admission to a state college, have completed 24 or more semester units of college work with a grade-point average of 1.0 (grade of C on a five-point scale) or better in the total program attempted.

"Not more than 64 semester units may be allowed for credit earned in a junior college. No upper division credit may be allowed for courses taken in a junior college. No credit may be allowed for professional courses in education taken in a junior college."

"931. **Other Applicants for Admission With Advanced Standing.** An applicant who fails to meet the standards listed above in this article may be considered by the appropriate state college authorities for admission to the college on probation when the facts in the case seem to warrant such action."

NOTE: A revision of the grade point system at San Diego State College beginning with the school-year, 1956-57, changed the C grade average from 1.0 to 2.0 (For further information, refer to the section of this catalog on General Regulations).

ADMISSION OF GRADUATE STUDENTS

FILING OF APPLICATIONS

All graduate students anticipating enrollment at this college must follow the procedures outlined above for admission to the college. Those students planning to take a program leading to a master's degree must, in addition, file an application for admission to the Graduate Division. These application forms may be obtained at the Office of the Graduate Division.

FILING OF RECORDS

The student must file official transcripts from EACH college or university attended (including extension, correspondence, summer session, or evening courses). If a student plans to enter a master's degree program or a graduate credential program, he must file all transcripts IN DUPLICATE. An official transcript is one sent directly between registrars of schools. The student should request the college or university attended to send the transcript to the Admissions Office, San Diego State College. All records or transcripts received at the Admissions Office become the property of the college and **will not be released nor will copies be made.**

A student who has obtained his degree from San Diego State need not file transcripts, except those transcripts covering work he may have taken at other institutions since leaving this college. He must, however, file an application for readmission to the college and, if he plans to enter a master's degree program, an application for admission to the Graduate Division and must comply with all other admission procedures outlined above.

BULLETIN OF THE GRADUATE DIVISION

The Bulletin of the Graduate Division is available at the Office of the Graduate Division.

CLASSIFICATION OF GRADUATES

Unclassified Graduate

Unclassified Graduate. A student holding an acceptable bachelor's degree from an accredited college or university may be admitted as an unclassified graduate student. Students in this category are not eligible to enroll in graduate level

(200-numbered) courses, except with permission of the instructor and concurrence of the Dean of Graduate Studies; and all work taken as an unclassified graduate, including graduate level (200-numbered) courses, is subject to evaluation as to its acceptance in the master's degree program.

Regular Graduate Standing

Regular graduate standing may be obtained by an unclassified graduate student upon meeting requirements for admission to the Graduate Division. These requirements are described in the Bulletin of the Graduate Division. Students with regular graduate standing are eligible to enroll in graduate level (200-numbered) courses.

Special Graduate Student

With the approval of the Dean of Admissions and Records, a graduate student who holds an acceptable bachelor's degree from a nonaccredited college or university may be admitted as a **special graduate** student, pending removal of all undergraduate deficiencies to which he may be held, and completion of at least 12 units of approved upper division postgraduate work with a grade point average of 2.5 or better, after which his classification may be changed to that of unclassified graduate student. Regular graduate standing may then be attained if the student meets requirements for admission to the Graduate Division.

ADMINISTRATIVE CODE

The California Administrative Code, Title 5, Education, provides as follows:

932. Admission to Graduate Standing. For admission to graduate standing in a state college, a student shall have completed a four-year college course with an acceptable baccalaureate degree from an accredited institution or must have completed equivalent training as determined by the appropriate state college authorities.

REGISTRATION REQUIREMENTS

Students who receive notice that they are eligible for admission to the college must complete additional requirements for registration, such as clearance of residency status, completion of prescribed tests and examinations, payments of fees, and the keeping of other designated appointments as outlined in the *Class Schedule and Instructions for Registration*, a publication issued prior to the beginning of each semester.

RESIDENCY CLEARANCE

Each student enrolling in the college must be classified as a resident or nonresident student, prior to the payment of registration fees. The Residency Office will issue instructions to the applicant on the procedure to follow in obtaining residency classification. Specific instructions will be found in the *Class Schedule and Instructions for Registration*, which is issued prior to the beginning of each semester. Applicants for the Evening Program only will find instructions on procedure to follow in obtaining residency classification in the *Evening Program Bulletin*, which is also issued prior to the beginning of each semester.

The residency classification received by any student is subject to review and change. Each student is held responsible for notifying the Residency Office of any change in his legal status as a resident of California.

COMPLETION OF TESTS

Admissions tests for freshmen and undergraduate transfer students must be completed before registration. All entering undergraduate students must take the college aptitude test. All undergraduate students transferring to this college with 45 units or more of advanced standing must take the writing competency test. All entering freshmen must take a reading comprehension test.

Other tests to qualify a student for admission to or placement in one of several programs, or tests to demonstrate competency in certain areas to satisfy part of the graduation requirements, may be taken before or following registration. For further information regarding these tests, refer to the section of this catalog on Application for Admission and to the calendar for test dates.

REGISTRATION AND PAYMENT OF FEES

Schedule for Registration

Registration Priority. Each student is assigned a registration number which determines the order in which he registers and pays fees. The schedule for registration and payment of fees is published in the *Class Schedule and Instructions for Registration,* which is issued prior to the beginning of each semester.

Student Program

The Student's Program. Provision is made for each student to obtain assistance from a faculty adviser in arranging a program. Opportunity is given at the time of registration for the reservation of classes. A complete description of this procedure will be found in the *Class Schedule and Instructions for Registration,* a publication available prior to the beginning of each semester. Fees are charged for administrative services, such as failure of student to meet administrative deadlines, changes of program, and similar services.

Assignment of Advisers

Students are assigned to a faculty adviser at time of registration. Each student should thereafter schedule a conference with his adviser at least once during each semester.

AUDITORS

Enrollment as an Auditor. A student who wishes to enroll in a class for "audit" instead of "credit" must meet all admission requirements and comply with all regulations for which the student taking the course for credit is held. An auditor pays the same fees and has the same privileges as do students who take equivalent work for credit, but are not held for final examinations and do not receive final grades or credit in courses.

CHANGES IN REGISTRATION

A student is responsible for any change in his program after the official study list has been filed. Forms for changes in program must be secured at the Registrar's Office. A fee of $1 is charged for a change in program.

SUMMER SESSION PROGRAM

San Diego State College conducts two summer sessions both of which offer credit applicable to graduation and residence requirements. During the six-week Term I session, six units of academic credit may be earned; and during the three-week Term II session, three units may be earned. The tuition fee for Summer Session work is $9.50 per semester unit or fraction thereof. An additional activity fee of $2 is charged for Term I. Information concerning course offerings and special workshops may be obtained by communicating with the Summer Sessions Office. A Summer Sessions Bulletin is available during the month of May and will be mailed free of charge upon request.

CAMPUS EVENING SESSION PROGRAM

In order to meet the needs of adults in the community for work on the college level, a Campus Evening Session program offers some courses in the late afternoon and evening. These include both undergraduate and graduate courses and carry full college residence credit. Classes offered under this program are part of the regular college offerings and are taught by faculty of the college, but moved to a late afternoon or evening hour to permit in-service teachers, public service personnel, businessmen, and others to attend.

Students enrolling under this program must be fully matriculated students who have met all admission requirements of the college, including the filing of an official application for admission, the filing of complete official transcripts from other schools and colleges, and in the case of undergraduates, the completion of required tests for admission. A special Evening Program Bulletin describing the current offerings, eligibility for admission, and procedures for registration is issued each semester and may be obtained upon request from the Office of the Coordinator of the Evening Program. Applications of new undergraduate students for admission to the college must be filed with the Office of Admissions at least four weeks prior to the beginning of a semester.

EXTENSION PROGRAM

In order to serve more adequately the needs of the community, the college co-operates with off-campus organizations and groups in arranging extension classes in response to expressed needs when the group is sufficiently large to finance the instruction. Offerings are made each semester in a number of departments including education, business administration, and the arts and sciences. Classes may be organized at various points within San Diego and Imperial Counties. A minimum of 15 to 20 students is usually required in order to establish a class. The usual class carries three units of credit and meets once a week, either in the late afternoon or evening. The minimum basic fee is $8.50 per unit.

For limitations on extension credit, see the section of this catalog on Credit for Extension Courses. Refer to the index for page number.

Interested persons desiring detailed information regarding organization of classes or current offerings should communicate with the Extension Office.

GENERAL REGULATIONS

INFORMATION

Students are held individually responsible for the information contained in these pages. Failure to read and comply with these deadlines and regulations will not exempt a student from whatever penalties he may incur.

NUMBERING OF COURSES

Courses numbered 1 through 99 or by letters (A, B, C, etc.) are in the lower division (freshman and sophomore years); those numbered 100 through 199 are in the upper division (junior and senior years); and those numbered 200 through 299 are strictly graduate courses. Courses numbered 300 or over are professional education courses in the postgraduate program.

CLASS RANK IN COLLEGE

Students who have completed 0 to 29 units of work are classified as freshmen; 30 to 59 units as sophomores; 60 to 89 units as juniors; and 90 or more as seniors.

LOWER DIVISION AND UPPER DIVISION COURSES

A student is considered to have lower division standing until he has earned 60 semester units, at which time he attains upper division standing.

Courses numbered 1-99 are lower division courses; courses numbered 100-199 are upper division courses.

ELIGIBILITY FOR UPPER DIVISION CREDIT

A student with lower division standing is not eligible to take upper division courses, with the following exceptions: A student in the last semester of his sophomore year who is approaching upper division standing carrying sufficient lower division units to complete the required minimum of 60 units may carry upper division units for the remainder of his study load. A student with sophomore standing may carry upper division courses for upper division credit provided that he has the written approval of the chairman of the department and the Dean of the College, or his authorized representative. This written approval must be filed at the Evaluations Office, Administration Building, on the Adjustment of Academic Record form, which may be obtained at the Evaluations Office.

UNITS OF WORK

A unit of credit represents 50 minutes of lecture or recitation combined with two hours of preparation per week through one semester, or three hours of laboratory or fieldwork in the case of laboratory credit.

GRADES AND GRADE POINTS

The following grades and grade points are used in reporting the standing of students at the end of each semester:

A, Outstanding achievement—4 grade points (prior to September 1956, 3 grade points)
B, Commendable—3 grade points (prior to September 1956, 2 grade points)
C, Satisfactory—2 grade points (prior to September 1956, 1 grade point)
D, Passing—1 grade point (prior to September 1956, 0 grade points)
F, Failure—0 grade points (prior to September 1949, minus 1 grade point)
I, Incomplete—0 grade points (prior to September 1956, not counted in student's grade average)
Cr, Credit (not counted in grade average, but units allowed)
WP, Withdrawal-Passing (not counted in grade average)
WF, Withdrawal-Failing (0 grade points for units attempted)

The number of grade points a student has earned in a subject is determined by multiplying the number of points he has received by the number of units attempted. The grade point average is determined by dividing the number of grade points earned by the number of units attempted.

A student must earn at least a C average (2.00) in all college work attempted to qualify for a bachelor's degree or a transcript of record with recommendation to another collegiate institution. (Prior to September 1956, a C grade average was 1.0 on the three grade-point scale.)

INCOMPLETE GRADE

One calendar year beyond the end of the term when an incomplete grade is assigned will be allowed for making up the incomplete through removal of course deficiencies. If the student re-enrolls in the course for credit and completes it, he has repeated the course, for which he will receive the credit and grade points earned. The incomplete will remain on the student's permanent record as units attempted with no grade points earned and cannot thereafter be made up through removal of course deficiencies.

This regulation does not apply to the theses courses numbered 299, which are not counted as units attempted until the final grade has been assigned, provided that the course be completed within the time permitted by the Graduate Office.

Incomplete at Time of Graduation

A candidate for graduation whose record carries an incomplete which was received within the last calendar year will be graduated without the opportunity of making up the incomplete if he is otherwise eligible for graduation; however, the incomplete will be counted as units attempted in determining grade point averages and the incomplete cannot be made up after the degree has been granted. If the student does not wish to be graduated with the incomplete on his record, he must officially withdraw as a candidate for graduation.

REPEATED COURSES

A student may repeat a course in which he has received a grade of D or F, but may not receive credit for the course more than once. A repeated course is counted as units attempted and is credited with the grade points earned, the effect being an averaging of the grades. If a student repeats a course in which he has received a grade higher than D, the repeated course will not be counted as units attempted nor will grade points be counted in the student's record.

Makeup of an Incomplete

An incomplete grade cannot be made up by repeating the course. It can be made up only by removing the course deficiencies. If the student re-enrolls for credit in the course for which he has received the incomplete grade and completes the course, he has repeated the course and will receive the credit and grade points earned. The incomplete will remain on his permanent record as units attempted with no grade points earned and thereafter cannot be made up through removal of course deficiencies.

STUDY LIST LIMITS

Students who enroll for more units than authorized, including courses taken concurrently outside this college, will not receive credit for the excess number of units.

UNDERGRADUATE PROGRAM

For the undergraduate student, a normal semester's program is 16 units. A student may carry up to 17½ units with the permission of his adviser. Greater variations must be approved by the Dean of the College. Programs of less than 12 units (the minimum full-time load) are subject to approval of a dean or authorized representative.

Students accepting extensive part-time employment are strongly advised to limit their study loads in college. Going to college is regarded as a full-time job. Students are normally expected to spend in class and study a total of three hours per week for each unit of college work attempted. A normal 16-unit load therefore represents a 48-hour week.

GRADUATE PROGRAM

The graduate student who is not taking any graduate level (200 numbered) courses may take the maximum load permitted for undergraduate students. The maximum load is 15 units per semester for graduate students in full-time attendance with one or more graduate level (200 numbered) courses. An excess study load requires approval of the Dean of Graduate Studies. The maximum amount which will be approved by petition for any one semester for students carrying one or more 200-numbered courses is 17 units and for any one year, 33 units. For students employed full time, the recommended study load maximum is six units.

CHANGE OF MAJOR FIELD

At the time of admission to the college, each undergraduate student is assigned to a major field. Any student wishing to change his major field after registration must make application at the Personnel Services Center. Veterans using veteran benefits must obtain appropriate approval from the Veterans Administration for necessary changes in letters of eligibility.

PROBATION AND DISQUALIFICATION

PROBATION

Any student, undergraduate or graduate, whose scholarship record falls below a C average (2.0) for all college work attempted or all college work attempted at San Diego State College will be placed on probation.

Probation may be continued provided that the student obtains a C average or better each semester while on probation. The student will be removed from probation when he has attained a C average or better on all college work attempted and on all college work attempted at San Diego State College.

DISQUALIFICATION

Disqualification for Scholarship. Any student on probation whose scholarship falls below a C average (2.0) in any single semester or summer session will be subject to disqualification and dismissal from the college.

Veterans who are disqualified from further attendance at this college forfeit their rights to veteran benefits. Specific information should be obtained from the Veterans Administration regarding continuance of education.

Reinstatement After Disqualification. A disqualified student may be reinstated for reasons satisfactory to the Board of Admissions. Applications for reinstatement must be made on forms which may be obtained at the Admissions Office. Students petitioning for reinstatement are required to have personal interviews with members of the Board of Admissions.

WITHDRAWALS AND CHANGES OF PROGRAM

OFFICIAL WITHDRAWAL

The student is held for every course appearing on his official study list. Any withdrawal from college or withdrawal from a class must be officially filed at the Registrar's Office; otherwise the student will receive a grade of "F" in the course. Application for withdrawal is made at the Registrar's Office.

Withdrawal Deadline Dates and Penalties

Withdrawal Deadline Dates and Penalties. If a student officially withdraws from college or from a class by the end of the third week of classes, a grade of WP (withdrawal passing) will be recorded upon his permanent record for each class from which he has withdrawn. If he withdraws after the third week and not later than the end of the eleventh week of classes, either a WP or WF (withdrawal failing) will be recorded, depending upon whether he is passing or failing the course on the date of filing the request for withdrawal. (WF is equivalent to a failing grade.) After the eleventh week of classes, withdrawal from a class is not permitted. A final grade will be recorded for each class for which the student is enrolled. Withdrawal from college (that is, from all courses) will be permitted up to ten days preceding the final examination schedule; however, the student will receive a WP or WF grade in each class, depending upon whether he is passing or failing in the class on the date of filing his request for withdrawal from college.

UNOFFICIAL WITHDRAWAL

Unofficial Withdrawal. A student unofficially withdrawing from class or from college will receive failing grades in all courses from which he unofficially withdraws. An unofficial withdrawal is one in which a student stops attending classes without filing official withdrawal forms within the deadlines established for withdrawing.

Veterans unofficially withdrawing will have veterans' allowances immediately suspended and will be subject to full repayment of allowances received after date of unofficial withdrawal.

CHANGE OF PROGRAM

Change of Program. A change of program includes the following: withdrawal from a class; adding a class; adding or reducing units to a class for which the student is already registered; changing from audit to credit or from credit to audit; changing a section of the same course.

A change of program may be made on or before the published dates for withdrawal. Forms for the change of program may be obtained at the Registrar's Office. A fee of $1 is charged for each change of program made after the official study list card has been filed. The effective date of withdrawal or change of program is the date on which the completed and acceptable forms are filed by the student at the Registrar's Office.

WITHDRAWAL TO ENTER MILITARY SERVICE

A student withdrawing from college to enter military service is entitled to apply for refund of materials and service fees or for partial credit (but not both). One-third credit is allowed for completion of the first six weeks of the semester, or two-thirds credit for completion of the first 12 weeks of the semester, in courses for which the student is enrolled and in which he is passing at the time of withdrawal. Entrance upon extended active military duty must be without unreasonable and unnecessary delay (normally 30 days) after the date of withdrawal from college to qualify the student for refund or partial credit. A student electing to receive a refund of materials and service fees or electing partial credit must file official verification of the date of entry upon *extended active duty.*

GRADE REPORTS TO STUDENTS

Following the close of the seventh week of instruction (eighth week of the semester), reports are sent to students who are doing unsatisfactory work. These reports are optional with an instructor. Students should be aware of their progress in a course and not depend upon receipt of formal notice if work is unsatisfactory.

At the end of each semester or summer session in which the student is enrolled, a grade report is sent to the student.

TRANSCRIPTS OF RECORD

An official transcript of record may be obtained by filing an application for transcript at the Registrar's Office. A fee of $1 is charged (first copy free). One week should be allowed for the processing and mailing of the transcript. Transcripts sent from one college to another are considered as official. Transcripts presented by a student to a college are considered to be unofficial and are usually not accepted.

Once a student has matriculated in this college or has had an official evaluation made, transcripts from other schools or colleges become the property of this college and *will not be released nor will copies be made.*

EVALUATIONS

An evaluation is a summary of college work completed and of requirements to be completed for a bachelor's degree or credential. To be eligible for an evaluation, a student must have completed at least 45 units of acceptable college work and be qualified for full matriculation. Transfer students with 45 units or more who enroll in the college will automatically receive an evaluation, which is available at the time of registration and advising. Authorization for more than one evaluation during any one semester or one evaluation in nine weeks of summer session requires special permission of the Board of Admissions and Evaluations.

APPLICATION FOR AN EVALUATION

A student who has earned 45 semester units or more, who has not received an evaluation, should apply at the Evaluations Office for an official evaluation. The evaluation is made on the regulations in effect at the time the student entered this college, subject to the following Education Code regulations:

913. Election of Regulations. A student remaining in continuous attendance in regular sessions and continuing on the same curriculum in a state college may, for purposes of meeting graduation requirements, elect to meet the graduation requirements in effect either at the time of his entering the curriculum or at the time of his graduation therefrom, except that substitutions for discontinued courses may be authorized or required by the proper college authorities.

All evaluations are subject to changes imposed upon the college by the State Board of Education. After an interval of five years from the time an evaluation is made, courses in education to be applied toward a teaching credential are subject to re-evaluation.

COLLEGE PROGRAM IN WRITING COMPETENCY

Standard English, free from flagrant errors in grammar and spelling, is required on written assignments throughout the college. To help students attain a reasonable proficiency, the English Department offers several courses in composition, beginning with the freshman year. Additional assistance is provided by the Reading-Writing Improvement Center. Passing of the Writing Competency test or satisfactory completion of designated courses or remedial programs is a requirement for graduation. This program is under the supervision of the College Committee on English.

THE HONORS PROGRAM

Any interested student who by the end of his sophomore year has maintained a high grade point average should consult his major adviser to learn the details of the departmental honors program, including specific requirements for eligibility to participate in the program and the special registration procedures required.

Students in the honors program, so far as the facilities of the department and the best interests of the students under its charge allow, shall be treated as benefits their individual needs and as their individual capabilities warrant. They shall be eligible to enroll in honors or special study courses, credit in such courses to be limited to six units per semester unless otherwise recommended by the major department or departments and approved by the Honors Committee. In addition, they shall not be held to regular attendance in the established courses of their departments if, in the opinion of the instructor, the objectives of such courses can be achieved through special assignments and examinations. With the consent of the major department or departments, requirements concerning minors and specific courses or sequences in the major may be modified. Each honor student shall be assigned to a member of his major department for advice and direction.

Students in the honors program who fail to take advantage of the opportunities there offered may at the end of any semester be required to withdraw from the honors program upon notification of the major department or departments. Students not in the honors program who show unusual capacity, may request to be transferred to the honors program contingent upon recommendation of the department and the Committee on Honors at the end of any semester.

DEGREE WITH HONORS

With the approval of the faculty, graduation with honors shall be granted to those students in each graduating class who have done highly superior work as shown by high grade point averages.

DEGREE WITH DISTINCTION IN THE MAJOR

Upon recommendation of his major department and with the approval of the faculty, a student doing superior work in his major field may be graduated with distinction in that field.

FINAL EXAMINATIONS

No final examination shall be given to individual students before the regular time. Any student who finds it impossible to take a final examination on the date scheduled must make arrangements with the instructor to have an incomplete grade reported and must take the deferred final examination within the time allowed for making up incomplete grades.

CREDIT BY EXAMINATION

Credit may be earned by examination under the following conditions: (1) the student must be a fully matriculated bona fide resident student enrolled in a regular semester at the college at the time the examination is administered; (2) approval to take the examination must be obtained from the Dean of the College and from the chairman of the department concerned, prior to the administration of the examination; and (3) the student must pay the additional fees, if needed, to qualify as a regular student.

Credit by examination is not acceptable on master's degree programs.

Approval to receive credit by examination is granted only at the discretion of the appropriate college authorities.

CREDIT FOR EXTENSION COURSES

The maximum amount of extension and correspondence credit which may be accepted toward the minimum requirements for the bachelor's degree is 24 semester units, not more than 12 of which may be transferred from another college or university, except that courses taken through the United States Armed Forces Institute, or other official military correspondence schools, shall not be included within these limits. Extension and correspondence credit do not count in satisfaction of the minimum residence requirement. A maximum of six units in extension courses at San Diego State College may be accepted as part of the requirements for the master's degree, subject to limitations described in the section of the catalog on the Graduate Division.

CREDIT GRANTED FOR MILITARY SERVICE

The college is guided by the recommendations of the American Council on Education in granting undergraduate credit toward the bachelor's degree for military service. Postgraduate credit is not granted.

To obtain credit for military service, the student must be fully matriculated and enrolled in the college and must file a photostat of the military separation form DD-214, or equivalent official records. These records should be submitted at the time of applying for admission to the college.

TRANSFER TO GRADUATE SCHOOLS

Attention of students who plan to transfer to the graduate school of the University of California is called to the fact that the university reserves the right to evaluate and possibly reduce the credit in certain work in which this college has given credit toward the baccalaureate. Examples of such work would be credit for nurse's training, credit transferred from certain foreign schools, certain vocational courses in junior colleges, credit for military service, and courses in this college of a nonacademic nature.

GRADUATE DIVISION

DEGREES OFFERED

The master of arts and the master of science degrees are conferred by San Diego State College through the Graduate Division. These degrees are designed to accomplish one or more of the following objectives:

1. To improve the student's professional competence in educational service.
2. To develop the student's ability for continued self-directed study in his field of specialization.
3. To afford an opportunity for the student to broaden his cultural background, to develop his personal and social responsibility, and to prepare for community leadership.

MATRICULATION REQUIRED

All students beginning postgraduate work, including graduates from San Diego State, must make formal application for admission to the college and comply with all admission requirements. Applicants for the master of arts or master of science degree must in addition make formal application for admission to the Graduate Division.

ADMISSION TO THE GRADUATE DIVISION

APPLICATION

An applicant for admission to the college for postgraduate work must follow the procedure for filing applications as outlined in the section of this catalog on Admission and Registration.

UNCLASSIFIED GRADUATE STUDENT

A graduate student who is accepted for admission to the college will be initially admitted as an **unclassified graduate** student. This classification is considered temporary for the student who wishes to enter a program leading to a master's degree. Under this temporary classification, the student is not eligible to enroll in 200-numbered courses, except with permission of the instructor and concurrence of the Dean of Graduate Studies; and all work taken as an unclassified graduate, including 200-numbered courses, is subject to evaluation as to its acceptance in the master's degree program.

ADMISSION TO REGULAR GRADUATE STANDING

To become eligible to enter and continue in a master's degree program, the student must attain **regular graduate standing** and be admitted to the Graduate Division. Requirements for regular graduate standing are as follows:

1. Completion of a four-year college course with an acceptable bachelor's degree from an accredited college or university.
2. A minimum grade point average of 2.5 on all undergraduate work taken for the bachelor's degree.
3. Completion of a scholastic aptitude examination required by the Graduate Division.
4. Satisfactory completion of minimum requirements of the division or department in which the student desires to major, including an appropriate undergraduate major or its equivalent and such departmental qualifying examinations as may be required.

Admission to the Graduate Division with regular graduate standing does not necessarily imply the acceptance of the student as a candidate for a master's degree.

ASSIGNMENT OF AN ADVISER

The Office of the Graduate Division advises all graduate students and assigns them to graduate advisers in the various departments of the college offering graduate work.

REMOVAL OF DEFICIENCIES

An applicant who does not have the last three qualifications named above for regular graduate standing will be referred to the Graduate Office for assignment to his appropriate department or division where under guidance he may continue postgraduate work as an unclassified graduate for the purpose of removing deficiencies and otherwise demonstrating ability to succeed in a regular graduate program. After satisfying the requirements of his department or division and the Graduate Council he may apply for regular graduate standing and admission to the Graduate Division.

WITHDRAWAL AND REINSTATEMENT IN GRADUATE PROGRAM

A graduate student who has begun work on a graduate program and has taken no courses on this program within the last calendar year is considered to have withdrawn from the program. Such students must file applications for readmission to the college and the Graduate Division if they wish to resume their graduate work. They may be required to comply with regulations and requirements in effect at the time their application for readmission is accepted.

THE MASTER OF ARTS DEGREE

GENERAL INFORMATION

San Diego State College is authorized by the State Board of Education to grant the master of arts degree with majors or concentrations in the following fields of study:

- Art
- Biology
- Business education
- Chemistry
- Economics
- Education
  - Audiovisual education
  - Elementary curriculum and instruction
  - Secondary curriculum and instruction
  - Elementary administration
  - Secondary administration
- Education (continued)
  - School supervision
  - Pupil personnel services
  - Special education
- English
- Foreign language
  - French
  - Spanish
  - Romance languages
- Health and Physical Education
- History
- Industrial arts
- Life science
  - Biology
  - Botany
  - Microbiology
  - Zoology
- Mathematics
- Music
- Personnel supervision and training
- Physics
- Political science
- Psychology, educational psychology
- Social science
- Sociology
- Speech arts

The master of arts degree program of a student who has regular graduate standing in the Graduate Division is determined on the basis of his educational background, experience, and objectives. Students who plan to teach, supervise, or administer in the elementary and secondary schools may elect a master of arts degree for teaching service with a concentration in an academic field or in education. Students for whom the foregoing objective is inappropriate may elect a master of arts degree with a major in an academic field.

REQUIREMENTS FOR THE MASTER OF ARTS DEGREE

Course and Unit Requirement

1. A minimum of 30 units of postgraduate work in approved courses numbered 100 or above. Thirty units must be completed within the seven-year period immediately preceding the date when all of the requirements for the degree are completed. In unusual circumstances, the student may petition for an extension of time.
2. A minimum of 12 units in 200-numbered courses.
3. A minimum grade point average of 3.0 (B) on all postgraduate work taken at this college in the graduate degree program, including prerequisites and courses

taken to remove deficiencies. Credit for courses in which a grade lower than "C" is received cannot be used to satisfy requirements for graduate degrees.

4. Twelve units earned after advancement to candidacy.
5. Not more than a total of six units may be in special study courses, 199 and 298;

(For required minimum units for each major or concentration, consult the appropriate section of the Bulletin of the Graduate Division.)

Residence

Applicants must complete at least 24 units of their programs in residence at San Diego State.

Advancement to Candidacy

In addition to holding regular graduate standing in the Graduate Division, a student desiring the master of arts or master of science degree must file (at the Office of the Gradaute Division) a complete program of study for the advanced degree as approved by his graduate adviser.

Advancement will not be granted, however, until the student has earned at least 12 units in his graduate program at this college with a minimum grade point average of 3.0 (B). An exception to this rule applies to gradautes of this college who may be advanced upon completion of at least six units, provided their undergraduate grade point average was at least 2.75. Advancement to candidacy is contingent upon the completion of all undergraduate deficiencies and departmental or divisional requirements; satisfactory scores on the scholastic aptitude examination and, if required, the achievement examination given by the Test Officer for the Graduate Division; recommendation for advancement to candidacy by the department or division concerned; and final approval by the Graduate Council.

Examinations

Every student desiring the master's degree must take the graduate aptitude examination prior to or during his first semester in residence. Certain departments require additional examinations. See below for comprehensive examinations.

Thesis

Plan A

Plan A, requiring a thesis or project, is available to students majoring in any field in which the master of arts degree is offered. Three units of credit are granted for the thesis or project, course 299, upon its acceptance by the student's thesis committee. Students will not be permitted to register for course 299 unil they have received official notice of advancement to candidacy from the Graduate Office and have an officially appointed thesis or project committee. Theses or projects must be completed four weeks in advance of the date of the convocation at which the degree is to be conferred. Information as to specific requirements for typing, binding, number of copies, etc., may be obtained at the Graduate Office.

Plan B

Plan B, involving a comprehensive examination, usually in lieu of a thesis, may be chosen by students majoring in education, business education, foreign language, and mathematics. Dates at which comprehensive examinations are given are determined by the department or division concerned. Results on comprehensive examinations are reported to the Graduate Office. Students majoring in education must pass the comprehensive examination to become eligible to take Education 295 A-B, the writing seminars required in their major concentration, or Education 299, Thesis.

Final Approval

The student's graduate program of study as approved by the Graduate Council must be completed before the degree will be granted.

THE MASTER OF SCIENCE DEGREE

GENERAL INFORMATION

San Diego State College is authorized by the State Board of Education to grant the master of science degree with majors in the following areas:

- Applied biology
- Business administration
- Chemistry
- Mathematics
- Mechanical engineering
- Physics
- Psychology
- Public administration

Applied Biology

Graduate studies in applied biology provide concentrations in botany, general biology, microbiology, and zoology, thus permitting a graduate student to receive advanced training for a wide variety of occupational specialties.

Business Administration

Graduate studies in business administration provide a broad graduate education in business or specialized preparation in such fields as accounting, banking and finance, business management, industrial management, insurance, marketing, and personnel management. Persons with undergraduate degrees in engineering can arrange programs especially planned to meet their needs in the fields of business management or industrial management.

Chemistry

Graduate studies in chemistry provide for concentration in the traditional subdivisions of chemistry: physical, inorganic, organic, biochemistry, and analytic. Special seminars planned for their applicability to industry may be obtained by the student.

Mathematics

Graduate studies in mathematics provide the foundation for advanced work in mathematics and such techniques of applied mathematics as may be required by industry.

Mechanical Engineering

Graduate studies in mechanical engineering provide an opportunity to obtain a high level of proficiency in the fundamentals of engineering and in the creative application of scientific advances to problems of advanced but practical nature.

Physics

Graduate studies in the physics program offer two areas of concentration, atomic and nuclear physics, and electronics. A wide variety of courses is available in the various fields of physics used in industrial and laboratory practice.

Psychology

Graduate studies in psychology are offered for students wishing to prepare for psychological work in business, industry, government, mental hygiene clinics, colleges and universities.

Public Administration

Graduate studies in public administration are designed to prepare students for public service and to give additional training to those persons in public service who wish to do advanced study. The program offers a broad education in basic administrative knowledge, political science, and related social science fields.

REQUIREMENTS FOR THE MASTER OF SCIENCE DEGREE

Course and Unit Requirements

1. A minimum of 30 units of postgraduate work in approved courses numbered 100 or above, and the satisfactory completion of six units of directed field experience, course 296, except that all or part of these six units may be waived if the student's professional work experience is judged adequate both in quantity and quality. All 30 or 36 units must have been earned within the seven-year period immediately preceding the date when all of the requirements for the degree are completed. In unusual circumstances, the student may petition for an extension of time.

2. A minimum of 12 units in 200-numbered courses (exclusive of course 296).
3. The minimum requirement for a major, which in most departments is 24 units of approved 100- or 200-numbered courses.
4. A minimum grade point average of 3.0 (B) on all postgraduate work taken at this college in the graduate degree program, including prerequisites to remove deficiencies. Credit for courses in which a grade lower than "C" is received cannot be used to satisfy requirements for graduate degrees.
5. Twelve units earned after advancement to candidacy.
6. Not more than a total of six units may be in special study courses, 199 and 298.

Residence

Applicants must complete at least 24 units of their programs in residence at San Diego State.

Advancement to Candidacy

See under Master of Arts–Advancement to Candidacy. (Same requirements except that achievement examination is not required.)

Examinations

Every student desiring the master's degree must take the graduate aptitude examination prior to or during his first semester in residence. Certain departments require additional examinations.

Thesis

Plan A, involving a thesis or project, is available to all majors in which the master of science degree is offered. Plan B, involving a comprehensive examination in lieu of a thesis, is available in chemistry, mathematics, and physics. (For further details, see the description above under The Master of Arts Degree–Thesis.)

Final Approval

The student's graduate program of study as approved by the Graduate Council must be completed before the degree will be granted.

GENERAL REGULATIONS FOR ALL GRADUATE DEGREES

1. **Transfer and/or Extension Credit.** A total of not more than six units of work earned at another college, if approved by the graduate adviser, or work taken in extension courses at San Diego State may be accepted as a part of the requirements for the master's degree. All extension courses must be approved by the major department or division and the Graduate Council prior to the date of completion of the course. Work taken by correspondence is not acceptable.
2. **Study Load.** The maximum study load in the summer session is one unit per week of attendance. During the fall or spring semesters, the maximum load is 15 units per semester when 200-numbered courses are included in the student's program. For students employed full time, the recommended maximum study load is six units.
3. **Official Program of Study.** Official programs of study, as signed or revised by the graduate adviser and accepted by the Graduate Council, are binding unless a student withdraws from the Graduate Division. Withdrawal is defined as taking no courses during a calendar year. Students who have withdrawn must file a request for readmission to the Graduate Division before they will be permitted to register for any courses leading to the master's degree.

   It is the student's responsibility to complete the specific courses listed on his official program of study. No changes will be permitted unless approved by the graduate adviser, the Graduate Council, and recorded in the Graduate Office. No course can be deleted from an official program after the course has been completed.
4. **Application for Graduation.** An application for graduation must be filed in the Graduate Office four weeks in advance of the date of graduation.

GENERAL REQUIREMENTS FOR THE BACHELOR OF ARTS AND BACHELOR OF SCIENCE DEGREES

TYPES OF CURRICULA

San Diego State College offers the following types of curricula:

(1) Arts and Sciences curricula, leading to a degree.
(2) Teacher education, leading to a degree and/or teaching credential.
(3) Occupational curricula, leading to a degree or certificate.
(4) Preprofessional curricula, leading to admission to professional schools.

GRADUATION REQUIREMENTS

(a) A minimum of 124 semester units for the A.B. degree or 128 to 132 semester units for the B.S. degree, representing a four-year college course, is required for graduation.

(b) A minimum of 24 semester units must be earned in residence, at least 12 of which must be completed among the last 20 semester units counted toward the degree. Credit in summer sessions may be counted on a unit for unit basis toward this requirement.

(c) Each student shall complete with a grade-point average of 2.0 (grade of C on a five-point scale) or better, a pattern of courses defined by this college. (The grade of A is 4.0; B is 3.0; C is 2.0; D is 1.0; F is 0.0.)

(d) At least 40 upper division units are required for the A.B. degree or at least 36 upper division units for the B.S. degree.

(e) The state requirements in American history, institutions and ideals; United States Constitution; and California state and local government must be completed for the bachelor's degree.

(f) All requirements in general education, the major and minor fields and any other requirements made by the college must be completed for graduation.

COMPETENCY TESTS IN ENGLISH, MATHEMATICS, AND SPEECH

Each student must demonstrate competence in the use of English writing, mathematics, and speech as determined by tests administered by the college. Students failing these tests are required to enroll in special remedial courses or programs. Passing these tests or satisfactory completion of designated courses or other remedial requirements is a requirement for graduation.

The **Writing Competency Test** must be taken at the first scheduled date for the test following the student's completion of 45 units of college work. Students transferring to this college with 45 units or more of advanced standing credit must take this test before registration. Passing this test or satisfactory completion of designated courses or remedial programs prescribed for the student by the College Committee on English is a requirement for graduation.

The **Mathematics Competency Test** is given once each semester and is open to all students. Students failing this test are required to enroll in Mathematics A. The graduation requirement in mathematics competency may be satisfied by passing the Mathematics Competency test, the course in Mathematics A, or one of the following lower division courses: Mathematics 3, 4, 10, 21, 22, 40, 50, 51, 52, or 60.

The **Speech Competency Test** is given to students who are enrolled in Speech Arts 3, Oral Communication, a required general education course. Students failing the test are required to enroll concurrently in Speech Arts 2, Oral Communication Laboratory, and complete the course for an additional one unit of credit as part of the graduation requirement in speech competency.

GRADUATION REQUIREMENT IN AMERICAN INSTITUTIONS

AMERICAN HISTORY, INSTITUTIONS AND IDEALS, UNITED STATES CONSTITUTION, AND CALIFORNIA GOVERNMENT

Each student of a state college to qualify for graduation shall demonstrate competence in the Constitution of the United States, and in American history, including the study of American institutions and ideals, and of the principles of state and local government established under the Constitution of this State, by completing appropriate courses, or by passing a comprehensive examination on these fields prepared and administered by each college. Students transferring from other institutions of collegiate grade, who have already met this requirement in college, shall not be required to take further courses or examinations therein.

This graduation requirement may be fulfilled by any one of the following alternatives:

Completion of Requirement Through Courses

(1) By satisfactory completion of one of the following groups of courses:

(a) History 17A and 17B
(b) History 172A and 172B
(c) Political Science 71A and 71B
(d) Political Science 139A and 139B

Completion of Requirement by Examination

(2) By satisfactorily passing a comprehensive examination in each of the following areas:

(a) American history, institutions and ideals
(b) United States Constitution
(c) California state and local government

Students electing to remove requirements through examination may obtain a bibliography of suggested reading at the Evaluations Office in the Administration Building. Examinations for removal of these requirements are given once each semester and in Term I summer session.

Completion of Requirement Through Combination of Courses and Examinations

(3) By satisfactory completion of a combination of courses or combination of courses and examinations in the required areas.

Students electing to remove requirements through a combination of courses or combination of courses and examinations should select courses from those listed below:

Courses meeting requirements in American History	*Courses meeting requirements in U. S. Constitution*	*Courses meeting requirements in California Government*
History 8A and 8B	Political Science 71A	Political Science 71B
History 176A and 176B	Political Science 115	Political Science 107B
History 179A and 179B	Political Science 107A and 107B	Political Science 115
History 181A and 181B	History 17A	Political Science 139B
	History 172A	Political Science 142
		Political Science 143
		Political Science 148
		History 8B
		History 17B
		History 172B
		History 189

GENERAL EDUCATION REQUIREMENTS

Forty-five semester units in courses designated in the college catalog and in the schedule of classes as general education must be completed in addition to courses in the major field, unless such courses are ones specifically required of all students as part of the general education program. These courses must be selected from the fields listed below with completion of the minimum number of units required and not exceeding the maximum number of units allowed in each field in order to satisfy the requirement of 45 units in general education. The pattern requirements in general education may be fulfilled by examinations with an accompanying reduction in the 45 units but without course credit. Permission to take such examinations must be obtained from the Dean of the College.

General education courses may be found in the section of the catalog under Announcement of Courses and Programs of Study. The course numbers are preceded by an asterisk (*).

For specific explanation of the requirements within each field of general education, refer to the explanation of requirements below.

GENERAL EDUCATION AREAS

	Minimum	*Maximum*
(a) Social Sciences	9	12
(b) Natural Sciences	9	12
(c) Literature, Philosophy, and the Arts	6	12
(d) Communication:		
Oral Communication	2	2
Written Communication	3	6
(e) Psychology	3	6
(f) Physical and Health Education:		
Physical Education	2	2
Health Education	2	2
(g) Mathematics	0	6
(h) Foreign Languages	0	6
(i) Family Life Education	0	6
(j) Air Science	0	6
Total number of units required	45	

SPECIFIC REQUIREMENTS IN GENERAL EDUCATION

The Social Sciences

(a) **Social Sciences.** A minimum of nine or maximum of 12 units must be selected from the general education social science courses listed below, with at least three units in each of two or more fields. Included in the selection should be courses which meet the graduation requirement in American history, institutions and ideals; U. S. Constitution; and California state and local government. The student should also refer to the requirements in his major field before selecting general education social science courses from the following lists:

Anthropology 1, 2, 3, 152

Geography 2, 12A-12B, 151, 152, 153

Political Science 1A-1B, 71A-71B, 105, 107A-107B, 111A-111B, 112, 115, 138, 139A-139B, 168-S, 170A-170B

Economics 1A-1B, 110, 111, 170

History 4A-4B, 8A-8B, 17A-17B, 121A-121B, 172A-172B, 179A-179B

Sociology 1, 10, 35, 125, 135, 140

The Natural Sciences

(b) **Natural Sciences.** A minimum of nine or maximum of 12 units must be selected from general education courses in the natural sciences. At least one general education course of not less than three units must be selected in the life sciences (biology) and at least one course of not less than three units in the physical sciences (astronomy, chemistry, Geography 1 or 3, geology, physical science, and physics). At least one unit of either physical or life science or the three-hour equivalent must represent laboratory work. Before selecting a course, the student should read the course description to determine whether there are exclusions or limitations in applications of the credit. He should also refer to the requirements in his major field before selecting general education natural science courses from the following lists:

Life Sciences

Nonlaboratory courses:
- Biology 1, 161
- Microbiology 110
- Oceanography 100
- Zoology 165

Laboratory courses:
- Biology 3, 4

Physical Sciences

Nonlaboratory courses:
- Astronomy 1, 2, 105
- Geography 1 or 3 (but not both)
- Geology 2
- Oceanography 100
- Physical Science 1, 2, 5, 130, 150
- Physics 2A, 2B

Laboratory courses:
- Astronomy 9
- Chemistry 2A, 2B
- Geology 3
- Physics 3A, 3B, 5

Literature, Philosophy, and the Arts

(c) **Literature, Philosophy, and the Arts.** A minimum of six or maximum of 12 units must be selected from general education courses in the area of literature, philosophy, and the arts.

At least one course of not less than three units must be selected in literature or philosophy from courses in English, comparative literature, or philosophy. Twelve units may be concentrated in these fields, but not in the arts.

Up to nine units may be selected from courses listed below under the fine arts and practical arts; but not more than three units may be counted in the practical arts toward general education.

Courses should be selected from the following list:

Literature and Philosophy

Comparative Literature 52A-52B, 101A-101B, 104A-104B, 115, 138, 140A-140B, 142, 152A-152B

English 2, 10, 50A-50B, 52A-52B, 56A-56B, 60A-60B, 101A-101B, 110, 115, 117A-117B, 119A-119B, 126B, 129, 131, 132, 133, 134, 149, 152A-152B

Philosophy 1A-1B, 20, 100A, 100B, 101, 111A-111B, 129, 135, 136

Fine Arts

Art A, B, 5, 6A, 8, 13, 16A, 18A, 50, 51, 52A, 52B, 150

Music 7A, 10A, 10B, 51, 70, 75 through 88, 151, 170, 175 through 188

Practical Arts

Home Economics 3, 4A, 15

Industrial Arts 5, 6, 85

Library Science 10

Oral and Written Communication

(d) **Oral and Written Communication.** Two units must be completed in oral communication by passing Speech Arts 3 or equivalent. A speech test is given to all students who enroll in Speech Arts 3. Students failing this test are required to register concurrently in Speech Arts 2, Oral Communication Laboratory, for one unit of credit which may not be counted toward general education requirements.

A minimum of three units, with a maximum of six units, must be selected from courses in written communication. All students must complete three units in English 1 or 1X as a prerequisite for all English courses except English 2.

Selection should be made from the following general education courses:

Oral Communication	*Written Communication*
Speech Arts 3, or two units of 1-X for foreign students	English 1, or 1-X for foreign students, 61, 62, 106

Psychology

(e) **Psychology.** Three units must be completed in Psychology 1 and three additional units may be selected from other general education courses in psychology. Selection should be made from the following courses:

Required	*Electives*
Psychology 1	Psychology 11, 12, 14, 106, 107, 145

Physical Education and Health Education

(f) **Physical Education and Health Education.** Two units must be completed in Health Education 21 and two units must be selected from general education courses in physical education, except that veterans who have served a minimum of one continuous year in the United States armed forces and are granted military credit for basic training are not required to enroll for Health Education 21 or for courses in physical education. Enrollment in physical education activity courses is required of freshmen and sophomores each semester.

The physical education requirement must be satisfied by completion of four semesters of activity courses for a minimum of two units. A physical education activity course taken in the summer session may be counted in lieu of a semester. Not more than one activity course within any one semester may be counted toward general education. An activity course may not be repeated for credit.

Health Education	*Physical Education*
	Men
Health Education 21	Physical Education 1 through 25, 122
	Women
	Physical Education 1 through 24, 122

Mathematics

(g) **Mathematics.** From zero to six units may be selected from general education courses in mathematics. Students failing the mathematics competency test must complete Mathematics A. This course may not be counted toward the general education requirements. Selection should be made from the following general education courses: Mathematics 1, 2, 3, 4, 10, 21, 22, 40, 50, 104.

Foreign Languages

(h) **Foreign Languages.** From zero to six units may be selected from general education courses in foreign languages. Note: Year-courses in foreign languages completed in high school may not be repeated in college for credit, except that the last year-course in any foreign language sequence completed in high school may be repeated in college for a maximum of three units of repeated work to be applied toward graduation.

Selection of general education courses in foreign language should be made from the following courses:

French	*German*	*Latin*	*Spanish*
French 1, 2, 3, 4, 40, 41, 140, 151	German 1, 2, 3, 4, 40, 41, 140, 141	Latin 1, 2, 3, 4	Spanish 1, 2, 3, 4, 40, 41, 140, 141

Family Life Education

(i) **Family Life Education.** From zero to six units may be selected from general education courses in family life education. Selection should be made from the following courses:

Business Administration 158
Health Education 90
Psychology 106
Home Economics 1, 3, 4A, 15, 70, 135, 150
Sociology 35, 135

Air Science

(j) **Air Science.** Two units will be granted for completion of Air Science 1A and two units for 1B. Two additional units will be granted for completion of Air Science 141A (or beginning with fall 1960, Air Science 131A). These six units correspond to the parts of the AFROTC program which lie in the area of social science, natural science, communication, and other areas of the general education pattern; however, these units will not be included within the unit minima or maxima specified in any such area.

BACHELOR OF ARTS DEGREE IN ARTS AND SCIENCES

REQUIREMENTS FOR THE DEGREE

The student must complete the following requirements for the bachelor of arts degree in arts and sciences:

1. One major field, in addition to 45 units in general education courses. (Refer to the department offering the major for specific information.)
2. One minor field, if required by the major department. (Refer to the department offering the minor for a description.)
3. A minimum of 124 units, **at least 40 units of which must be in courses carrying upper division credit** (may include the major and minor).
4. All graduation requirements described in the section of the catalogue on General Requirements for the Bachelor of Arts and Bachelor of Science Degrees.

MAJOR FIELD

The major in arts and sciences consists of the total number of upper division units in the major field, including the specific courses prescribed by the department. Prerequisite and related courses in the lower division must also be completed. Unless otherwise provided, these required lower division courses may not be included in general education.

LIST OF MAJORS

Majors in arts and sciences are offered in the following fields:

Anthropology
Art
Botany
Chemistry
Economics
English
French
*General major
Geography
Geology
History
Home economics
Industrial arts
Journalism
Language arts
Latin-American Studies
Life science
Mathematics
Microbiology
Music
Philosophy
Physical education
Physical science
Physics
Political science
Psychology
Public administration
Public personnel management
Recreation
Romance languages
Social science
Social welfare (Presocial Work)
Sociology
Spanish
Speech arts
Zoology

The General Major

* **General Major.** The general major offers an opportunity for students to obtain a general type of training leading to occupational objectives not otherwise provided in the regular curricular programs available in the college.

Requirements. In addition to the general education requirements, a student taking the general major must complete 36 upper division units chosen from three fields with not more than 15 units nor fewer than nine units from any one field. A minimum of a year course in each field must be completed in the lower division as foundation for upper division work in the general major. A minor is not required; however, four additional upper division elective units must be completed to meet the minimum requirement of 40 upper division units for graduation.

Procedure for Approval. The student electing a general major will use the following procedure in obtaining approval:

1. Make application at the office of the Personnel Services Center.
2. Plan a program in consultation with a counselor in the Personnel Services Center and fill out two copies of the official form: Master Plan for the General Major.
3. On the official forms, obtain the signature of approval from the department chairman in *each* of the three fields selected.

4. For final approval, obtain the signature of the Dean of the College (or authorized representative) or of the Dean of Counseling and Testing.

5. File the two official forms, completely signed and approved, in the office of the Personnel Services Center. The student is not enrolled in the general major program until these approved forms have been appropriately filed.

MINOR FIELD

MINOR REQUIREMENTS

A minor in arts and sciences may be required by the department offering the major. In departments not requiring a minor, the minor is optional with the student. A minor generally consists of a minimum of 15 units, or maximum of 22, six to nine units of which must be in courses carrying upper division credit as specified by the department. A few minors may exceed the 22 unit maximum. The minor may include courses which are also included in the general education requirements.

LIST OF MINORS

Minors in arts and sciences are offered in the following fields:

- Accounting
- Air science
- Anthropology
- Art
- Astronomy
- Banking and finance
- Botany
- Broadcasting
- Business Education
- Business management
- Chemistry
- Comparative literature
- Credit management
- Economics
- Education
- Engineering
- English
- French
- Geography
- Geology
- German
- Health education
- History
- Home economics
- Industrial arts
- Industrial management
- Insurance
- Journalism
- Life science
- Marketing
- Mathematics
- Microbiology
- Music
- Philosophy
- Physical education
- Physical science
- Physics
- Political science
- Psychology
- Public administration
- Recreation
- Secretarial management
- Sociology
- Spanish
- Speech arts
- Zoology

CURRICULA THROUGH DIRECTED STUDY

Through a planned arrangement of courses within the major and minor fields, certain specialized curricula may be developed, such as preprofessional programs, area study and contemporary civilization programs, and programs of an occupational nature not otherwise provided for in the major fields. Such programs are listed below and are described in other sections of the catalog as indicated.

PREPROFESSIONAL CURRICULA

A description of these programs appears in the section of the catalog on Preprofessional Curricula. Programs are available in the following areas:

- **Predental**
- **Prelegal**
- **Premedical**
- **Preparation for other professions**

BROAD AREA STUDIES

For a description of programs in **American Studies, European Studies,** or **Humanities,** refer to the section of the catalog on Humanities.

BACHELOR OF SCIENCE DEGREE IN ARTS AND SCIENCES

REQUIREMENTS FOR THE DEGREE

The student must complete the following requirements for the bachelor of science degree in arts and sciences:

1. One major field, in addition to 45 units in general education courses. (Refer to the department offering the major for specific information.)
2. From 128 to 132 units, with a minimum of 36 upper division units (may include courses in the major).
3. All graduation requirements described in the section of the catalog on General Requirements for the bachelor of arts and bachelor of science degrees.

MAJOR FIELD

The major in arts and sciences consists of the total number of upper division units in the major field, including the specific courses prescribed by the department. Prerequisite and related courses in the lower division must also be completed. Unless otherwise provided, these required lower division courses may not be included in general education. A minor is not required for the B.S. degree.

LIST OF MAJORS

Majors in arts and sciences are offered in the following fields:

Science

Botany
Chemistry
Engineering
Life science
Microbiology
Nursing
Physics
Zoology

Other

Health education
Radio and television broadcasting

Business Administration

Accounting
Banking and finance
Business education
Business management
Industrial management
Insurance
Marketing
Office management
Personnel management
Real estate
Secretarial management

CURRICULA THROUGH DIRECTED STUDY

Through a planned arrangement of courses within the major and minor fields, certain specialized curricula may be developed, such as preprofessional programs and programs of an occupational nature not otherwise provided for in the major fields. Such programs are listed below and are described in other sections of the catalog as indicated.

PREPROFESSIONAL CURRICULA

A description of these programs appears in the section of the catalog on Preprofessional Curricula. Programs are available in the following areas:

Predental
Prelegal
Premedical
Preparation for other professions

MEDICAL TECHNOLOGY PROGRAM

Medical Technology. For a description of this program, refer to the section of the catalog on Microbiology.

PREPROFESSIONAL CURRICULA

Preprofessional curricula, which usually require three or four years of collegiate work, are offered. Curricular outlines of preprofessional study, which are presented on the following pages, meet the typical requirements for admission to professional schools. Students expecting to complete their professional training at other institutions should modify the suggested outlines of study to meet the requirements of the professional schools of their choice. Curricular outlines are presented for predental, prelegal, and premedical programs. Students planning to enter other professional fields, such as agriculture, forestry, optometry, pharmacy, veterinary science, may obtain assistance from faculty advisers in arranging appropriate preprofessional courses of study.

PREDENTAL CURRICULUM

Candidates for a degree in dentistry should ascertain the entrance requirements of the dental college to which they expect to transfer and should make whatever changes in the following typical requirements that may seem desirable in satisfying the requirements of the specific dental college.

The curriculum for dental hygiene is essentially the same as for predentistry.

Students ordinarily elect to concentrate in chemistry and zoology with a major in one and a minor in the other. Requirements for these majors and minors are described under these departments.

High school students planning to enter dentistry should include in the high school program the following subjects: elementary algebra, plane geometry, intermediate algebra, chemistry, physics, mechanical drawing, and three units in one foreign language if required by the college to which a student expects to transfer.

Course of Study for Predental Curriculum. Freshman year, physical education activities, Health Education 21, Speech Arts 3, English 1, English 2 or other literature course, Mathematics 3 and 4, Chemistry 1A-1B, Biology 5 or Biology 4 (31 units); sophomore year, physical education activities, Psychology 1, Chemistry 5A, Physics 2A-2B and 3A-3B, Zoology 51, Biology 15, social science including courses in American history, institutions and ideals; U. S. Constitution; and California state and local government (30 units).

The following courses for a third year in preparation for dentistry are suggested for students who fail to receive acceptance from a dental college after completing the prescribed 60 units: Chemistry 101A-101B, Zoology 100, Art 119A, Psychology 11, additional courses in general education.

PRELEGAL CURRICULUM

The following curriculum is designed to meet the requirements of standard American schools of law for a broad and liberal education, while at the same time providing desirable flexibility in the individual programs. There are two patterns of concentration which will usually be indicated for the prelegal student, either of which may be selected, in consultation with the adviser, to fit best the interests of the student. These are the major-minor pattern and the general major pattern. Subject to individual variation, the fields of economics, history, and political science should receive first consideration when choosing the pattern of concentration as being the most effective background for later professional study in law and for possible activities in the field of business.

RECOMMENDED COURSE OF STUDY FOR PRELEGAL CURRICULUM

Lower division. Business Administration 1A-1B, Economics 1A-1B, Political Science 1A-1B or 71A-71B, and a year course in history. *Upper division:* In the junior and senior years the student will plan his course with the counsel of his adviser in terms of the field of law in which he plans to work, but keeping in mind the entrance requirements and examinations for admission to schools of law. The recommended list below should receive prime consideration by all prelegal students in the selection of courses, though it is to be thought of as flexible in accordance with student needs.

Up to 12 units of lower division courses in social science may be counted toward the general education requirements in social science, depending upon the major selected.

Recommended. Economics 131, 133, 150, 170; History 151A-151B, 175A-175B; Political Science 111A-111B, 139A-139B.

Beyond the courses taken in the fields of concentration, upper division electives in English, philosophy, psychology, sociology, and speech arts are recommended. A mastery of English expression is essential. The approval of a prelegal adviser is required for all master plans. If the general major pattern of concentration is chosen, a copy of the master plan is to be filed with the Evaluations Office.

PREMEDICAL CURRICULUM

The entrance requirements of medical colleges ordinarily range from three to four years of premedical work. The lower division requirements of the liberal arts curricula include the general requirements of standard medical colleges and should therefore be met in full whether the curriculum extends over a period of three or of four years. All plans for premedical work should include an arrangement of courses to meet the requirements of the medical college which the student expects to enter.

Students ordinarily elect to concentrate in chemistry and zoology with a major in one and a minor in the other. Requirements for these majors and minors are described under these departments.

High school students planning to enter medicine should include in the high school program the following subjects: elementary algebra, plane geometry, intermediate algebra, chemistry, physics, two or three years of French or German. Two years of Latin also recommended.

Course of study for premedical curriculum in addition to general education requirements:

Freshman year: Chemistry 1A-1B, Biology 5 or Biology 3 and 4 or Physics 2A-2B, 3A-3B.

Sophomore year: Chemistry 5A, Physics 2A-2B, 3A-3B or Zoology 51, and foreign language.

Junior year: Chemistry 101A-101B, foreign language to 12 units, Zoology 100 and 106.

Senior year: Completion of requirements for graduation with a major preferably in chemistry or zoology.

Students should consult with the adviser in the premedical curriculum for selection and arrangement of courses.

PREPARATION FOR OTHER PROFESSIONS

Programs leading to professional study in agriculture, architecture, forestry, optometry, pharmacy, theology, veterinary science, and other areas, may be planned for a student who may wish to take some undergraduate work in liberal arts at this college. Since these professional areas frequently require a complete four-year course of study at the institution granting the degree, preprofessional programs are not provided at San Diego State. If the student wishes to take work at this college, he is advised to consult the catalog of the college to which he expects to transfer to determine requirements before arranging his program. Faculty advisers will assist the student in planning his course of study.

PROFESSIONAL CURRICULA IN TEACHER EDUCATION

TEACHING CREDENTIALS

Anyone wishing to teach or provide other types of professional service in the public schools of California must hold a credential issued by the State Department of Education. Several kinds of credentials are available, each authorizing certain specific kinds of service. A student who completes the prescribed program at San Diego State College for any of the credentials listed below will be recommended by the college to the State Department of Education for the credential.

This section of the catalog describes (1) the general nature of all credentials and combinations of certain credentials, (2) admission to teacher education, and (3) basic programs of study for all credentials. The program of studies for each of the majors within the special secondary, general secondary, and junior high school credentials can be found in the section of the catalog on Announcement of Courses and Programs of Study, under the heading of the department offering the major.

CREDENTIAL PROGRAMS

Programs of study are offered for the following credentials:

The credential	Subjects and grades for which is is valid
General Elementary	Kindergarten through grade 8.
Kindergarten-Primary	Kindergarten through grade 3.
Junior High School. A special program is offered in combination with the General Elementary Credential	All subjects in grades 7, 8, and 9 in all elementary or secondary schools.
General Secondary	All subjects in the public schools in grades 7 through 14.
Special Secondary in Art	Art in all grades of the public schools.
Special Secondary in Business Education	Business education subjects in all grades of the public schools.
Special Secondary in Homemaking Education	Homemaking education subjects in all grades of the public schools.
Special Secondary in Industrial Arts	Industrial arts in all grades of the public schools.
Special Secondary in Music	Music in all grades of the public schools.
Special Secondary in Physical Education	Physical education in all grades of the public schools.
Special Secondary in Speech Arts	Speech in all grades of the public schools.
General Pupil Personnel Services	To serve in the areas of psychology, psychometry, counseling, or child welfare and attendance in all grades of the public schools.
Teaching Exceptional Children	To teach mentally retarded or speech correction and lipreading in remedial classes in all grades of the public schools.

Administration in Elementary Education	To serve as superintendent, deputy superintendent, assistant superintendent, principal, vice-principal, and supervisor of instruction in elementary schools.
Administration in Secondary Education	To serve as superintendent, deputy superintendent, assistant superintendent, principal, vice-principal, and supervisor of instruction in secondary schools.
Supervision	To supervise instruction in the field or on the grade level for which a regular valid basic credential is held.

COMBINATION OF CREDENTIALS

Students who seek more than one teaching credential must complete in full the curriculum for each, with only such exceptions as are indicated in the statement of requirements.

General Elementary and Junior High School Credentials

A combined program leading to the junior high school and general elementary credentials is available. Entering students interested in such a program should request an adviser for the junior high school credential.

A combination of the general elementary credential and the junior high school credential may be secured by completing the requirements for the elementary school credential and the following additional requirements:

(a) A junior high school teaching major plus a teaching minor to be approved by the Coordinator of Secondary Education.
(b) Education 121 in the major field or equivalent elementary education course.
(c) Three units of directed teaching, or equivalent, in a junior high school.
(d) Education 100 or 102.

Junior High School and Special Secondary Credentials

A combination of the junior high school credential and a special secondary credential may be secured by completing the requirements for the special secondary credential and the following additional requirements:

(a) A junior high school teaching minor approved by the Coordinator of Secondary Education.
(b) Education 121 in the junior high school teaching minor.
(c) Three units of student teaching in the junior high school teaching minor.

Credentials for General Elementary and Teaching Exceptional Children

The general elementary credential and the credential for teaching exceptional children in either area of specialization, speech correction and lipreading in the remedial classes, or teaching of the mentally retarded, may be combined by careful scheduling of all requirements for both credentials. It will probably be necessary to attend one or more summer school sessions in order to complete the requirements for the combined credentials within a four-year period.

ADMISSION TO TEACHER EDUCATION

APPLICATION FOR ADMISSION

Students who plan to earn credentials for teaching or other school service should apply for admission to teacher education during either the second semester of the freshman year or the first semester of the sophomore year. Students entering the college at the end of the sophomore year will apply at the beginning of the junior year. Application may be made at a special meeting held each semester. (For date and place of this meeting, refer to the calendar in this catalog.) No courses in education may be taken until admission is granted; any exception to this rule must have the approval of the appropriate admissions committee.

STANDARDS FOR ADMISSION

The standards for admission to teacher education are different from those for admission to the college; therefore, admission to the college does not guarantee that the student will be admitted to teacher education. The committees on admission to teacher education will base their decision upon the following factors:

1. A satisfactory score on the college aptitude test taken at the college.
2. Competence in the use of English and satisfactory ability in arithmetic, handwriting, reading and spelling as indicated by scores on fundamentals tests for those applying for elementary education. (See the college calendar for dates of these tests which should be taken in the second semester of the freshman year.)
3. Satisfactory scores on a general culture test, English proficiency test, and mathematics competency test, for junior high school, special secondary, or general secondary credentials. (See the college calendar for dates of these tests, which should be taken in the second semester of the freshman year.)
4. Satisfactory quality of speech and voice control.
5. Results of the college health examination given for teaching credential candidates.
6. Interviews with representatives of the Admissions Committee and, for secondary education only, with a representative of the department in which the student is a major. The Admissions Committee will base its evaluation upon the following factors established by the State Board of Education: intelligence, scholarship, professional aptitude, personality and character, speech and language usage, and many-sided interests.
7. Satisfactory grade point averages on the first two years or more of a given curriculum or its equivalent and on all subsequent work taken for the credential. Minimum grade point averages are indicated below:
   a. Elementary, kindergarten-primary, special secondary credentials, 2.2.
   b. General secondary credential: all subjects, 2.5, and major field, 2.75.
   c. Junior high school credential, 2.5.
8. For administration, supervision, and general pupil personnel services credential candidates, a satisfactory grade point average (minimum 2.75) on all work applicable to that credential, exclusive of the work applied to the basic credential.
9. For general secondary credential candidates, an official evaluation and program approved by the authorized departmental representative in the student's major field and by a representative in secondary education.

TRANSFER STUDENTS

Students who have completed two or more semesters of work in another college, upon transferring to San Diego State College, should make application for admission to teacher education as soon as they enroll in the college. Transfer students admitted to the college with either upper division or graduate standing should take the necessary tests for admission to teacher education given during the testing and advising program before the beginning of their first semester at the college. (See college calendar for dates.)

TRANSFER STUDENTS WITH PROVISIONAL CREDENTIALS

Teachers with a provisional credential who are teaching and working concurrently toward a regular credential may have a program designed to fit their background. According to present law, teachers on provisional credentials are required to embark upon a program with an accredited institution leading to a degree and/or a credential before the provisional credential can be renewed. Before the renewal can be certified by San Diego State College, the student must be fully matriculated in the college and must complete admission to teacher education. (Refer to the requirements stated above for admission to teacher education.) Also, at the time of renewal, successful teaching experience must be verified. For an evaluation of college credit completed to date, make formal application at the Evaluations Office, Administration Building, San Diego State College. For additional details, see the Coordinator of Elementary Education or the Coordinator of Secondary Education.

ADVANCED STANDING IN TEACHER EDUCATION

A student transferring into San Diego State College with advanced standing must complete a minimum of six units of professional education work in residence at San Diego State College before recommendation for a credential, regardless of extent of education work already completed elsewhere. Whenever a transfer student has had teaching experience, the college requires that a statement from the employer(s) be filed with the Evaluations Office.

EVALUATION OF CREDITS

After an interval of five years, courses in education are re-evaluated and subject to reduction in credit, in light of such new requirements as may have been put into effect and changes in educational procedures. Students formerly in attendance will not be considered to be working in the curriculum until an evaluation and statement of credit has been secured from the Evaluations Office. All courses taken either at this college or elsewhere must be approved by an official adviser in order to be credited toward meeting credential requirements or pattern requirements for a degree.

GENERAL ELEMENTARY AND KINDERGARTEN-PRIMARY CREDENTIALS WITH THE BACHELOR OF ARTS DEGREE

The general elementary and kindergarten-primary credentials are granted with the A.B. degree in teacher education. All elementary education students must complete requirements for the general elementary credential. Those who wish to specialize further in kindergarten-primary education may elect courses leading to the additional credential.

Requirements for the general elementary and kindergarten-primary credentials overlap with the following exceptions: Kindergarten-primary practicum, piano, and directed teaching in the kindergarten. These courses may be taken as part of the 124 units required for a general elementary credential.

Major for the Credentials

The major for the general elementary or kindergarten-primary credential is in elementary education. The program of studies for this major and for these credentials will be found in the section of the catalog on Announcement of Courses and Programs of Study, under the heading Education. Curricular outlines for both credentials may also be obtained from the Coordinator of Elementary Education.

Minors for the Credential Program

One of the minors listed below is required in either of the credential programs. A description of the minor may be found in the section of the catalog on Announcement of Courses and Programs of Study, under the heading of the department offering the minor.

English
Foreign languages
(French, German, Spanish, Romance languages)
General science
Industrial arts
Mathematics
Physical education
Social science
Speech arts (creative or speech correction)

ACCELERATED CREDENTIAL PROGRAM FOR STUDENTS WITH FOUR-YEAR DEGREES

Students with A.B. or B.S. degrees are eligible for an accelerated program leading to a general elementary and/or kindergarten-primary credential. The normal three-semester sequence in professional education is condensed into two semesters. Requirements for admission to teacher education are the same as for undergraduates. For additional information see the Coordinator of Elementary Education.

JUNIOR HIGH SCHOOL CREDENTIAL WITH THE BACHELOR OF ARTS DEGREE

The junior high school credential is granted with the A.B. degree in teacher education. It is available to students with minors in home economics or industrial arts or in combination with the general elementary or special secondary credential. Students wishing to secure the junior high school credential under conditions other than these should see the Coordinator of Secondary Education for program approval.

One teaching major, in addition to 45 units in general education courses, and one teaching minor are required of all students taking this credential. Students not taking this credential in combination with another credential are required to complete a minimum of 24 units in professional education courses. Students taking this credential in combination with another credential should refer to the section of the catalog entitled: Combination of Credentials.

Teaching Majors and Minors

Teaching majors and teaching minors are offered in the following fields:

Teaching Majors

- English
- Foreign languages (French, Spanish, Romance languages)
- General science
- Mathematics
- Social science

Teaching Minors

- Home economics
- Industrial arts
- or
- The special secondary field major when the combination credentials are earned

The program of studies of each of these majors and minors will be found in the section of the catalog on Announcement of Courses and Programs of Study, under the heading of the department offering the major.

Professional Courses in Teacher Education

Professional courses in teacher education include 24 units in the following: Education 100, 110, 120, 121 (methods in the major and minor fields), 180, plus Health Education 151.

SPECIAL SECONDARY CREDENTIAL WITH THE BACHELOR OF ARTS DEGREE

Majors

The special secondary school credential is granted with the A.B. degree in teacher education in the following fields:

- Art
- Business education
- Homemaking education
- Industrial arts
- Music
- Physical education
- Speech arts

The program of studies for each of the majors will be found in the section of the catalog on Announcement of Courses and Programs of Study, under the heading of the department offering the major.

Professional Courses in Teacher Education

Professional courses in teacher education consist of 22 upper division units to include the following: Education 100, 110, 120, 121 (methods in the major), 180, and Health Education 151. Certain of the majors require additional professional education courses. These are listed in each case along with the requirements for the major.

GENERAL SECONDARY CREDENTIAL

GENERAL INFORMATION

A candidate for the general secondary school credential must complete the requirements for an A.B. or B.S. degree with prescribed work in one of the majors and one of the minors listed below, together with the 45 units in general education courses required by this college for the degree.

Credential Requirements in General Education

The general education requirements at this college will satisfy those required for the credential. Students who have received the bachelor's degree from another institution must have earned at least 40 units of general education to include a minimum of six units in each of the following areas: (1) science and mathematics, (2) practical and fine arts, (3) social studies, (4) communicative arts. In addition, all candidates for the credential must complete from 24 to 30 units in a graduate year.

Majors Common to Both General and Special Secondary Credentials

Students desiring a major in art, business education, homemaking education, industrial arts, music, physical education, or speech arts may complete the requirements for the special secondary credential simultaneously with the bachelor's degree; then continue with the graduate program. For further details regarding these majors, refer to the section of the catalog on Announcement of Courses and Programs of Study, under the heading of the department offering the major.

MAJORS AND MINORS FOR THE GENERAL SECONDARY CREDENTIAL

Teaching Majors

Art
Business education
English
French
Health education
Homemaking education
Industrial arts
Language arts
Life science and General science
Mathematics
Music
Physical education (Men)
Physical education (Women)
Physical science and General science
Psychology
Romance languages
Social science
Spanish
Speech arts

Teaching Minors

Art
Business education
Economics
English
French
German
Health education
History
Homemaking education
Industrial arts
Life science and General science
Mathematics
Music
Physical education (Men)
Physical education (Women)
Physical science and General science
Social science
Spanish
Speech arts

Persons with majors in broad fields (language arts, life science and general science, physical science and general science, Romance languages, or social science) cannot take a minor within the area of their major.

Requirements in the teaching majors and minors are described under the heading of the department offering the major or minor. Refer to the section of the catalog on Announcement of Courses and Programs of Study.

PROGRAM APPROVAL REQUIRED

Every candidate for the general secondary credential must have a program approved in writing by the departmental representative in the major teaching field and in education as part of admission to the teacher education program.

Any person desiring the general secondary credential should consult with the Coordinator of Secondary Education during his first semester of attendance at San Diego State College.

RECOMMENDED PROGRAM FOR THE GENERAL SECONDARY CREDENTIAL

1. The following courses should be completed before receiving the bachelor's degree: Health Education 151 (may be taken any semester); Education 100 and 110 (should be taken consecutively). Those persons changing from another vocational objective to education during the senior year may take Education 100 and 110 concurrently by special permission of the Coordinator of Secondary Education, following admission to teacher education and a check of the student's qualifications.

	Units
Health Education 151, Health Education for Secondary Teachers	2
Education 100, The Secondary School	4
Education 110, Development and Learning	4

2. After completion of requirements in (1) above, the following courses may be taken either before or after receiving the bachelor's degree; however, they should be taken concurrently with the first directed teaching assignment unless the student has equivalent teaching experience.

	Units
Education 120, The Teaching Process	4
Education 180 or 316A, Directed Teaching-Secondary (or equivalent)	3
Education 121 (methods in field of student teaching assignment)	2–4

3. The graduate work must consist of San Diego State College's standard year of work, 24 to 30 semester units of upper division or graduate work, including the following specific requirements:

(a) At least 12-15 semester units completed at San Diego State College.

(b) At least six upper division or graduate semester units in subject fields commonly taught in junior and senior high schools. Graduate work in the major is recommended when this is a teaching subject area field.

(c) Enough units to complete at least a 21 semester unit minor, with a minimum of six semester units of upper division credit in the minor subject area.

For a statement of requirements in the teaching major and minor fields, refer to the department offering the major or minor, in the section of the catalog on Announcement of Courses and Programs of Study.

4. Professional Education during the graduate year: Completion of the courses listed in (1) and (2) above and the following:

Education 121 (in the field of the second directed teaching assignment) if not taken under (2) above	2
Education 230, Guidance Problems in Secondary Education	3
Education 250, Curricular Problems in Secondary Education	3
Education 316A, Directed Teaching, or equivalent teaching experience	3–6

CREDENTIAL TO TEACH EXCEPTIONAL CHILDREN

The credential to teach exceptional children is available in the following areas of specialization:

A. Speech Correction and Lipreading in Remedial Classes

B. Teaching of the Mentally Retarded

CREDENTIAL REQUIREMENTS

In addition to the general requirements of the State of California for all credentials, the following are requirements for the credential to teach exceptional children:

(1) Possession of, or concurrent application for, a valid kindergarten-primary, general elementary, junior high school, or general secondary credential.

(2) Satisfactory completion of interviews for admission to the program for exceptional children.

(3) Completion of the work for the general area and the area of specialization as indicated below.

a. The general areas:	*Units*
Education 170, Exceptional Children	3
Education 115 or 230 or Psychology 152, Counseling and Guidance	3
Speech Arts 170, Speech Development	3
Education 182 or 316B, Directed Internship	4
Total	13

b. Area of specialization:

1. *Speech Correction and Lipreading in Remedial Classes:*

Speech Arts 150, Phonetics	3
Speech Arts 174, or Education 174, Principles and Methods of Speech Correction	3
Speech Arts 176, Stuttering and Neurological Disorders	3
Speech Arts 177, or Education 177, Aural Rehabilitation	3
Speech Arts 178, or Education 178, The Teaching of Lipreading	2
Speech Arts 179, Clinical Methods in Speech Correction	3
Speech Arts 180, Field Work in Clinical Practice in Speech Correction	4–6
Total	21–23
Grand total	34–36

It is strongly recommended that students in the area of speech and hearing therapy obtain as much background in psychology as possible.

Suggested courses are:

Psychology 131, Psychology of Personality (3)
Psychology 150, Abnormal Psychology (3)
Psychology 151, Introduction to Clinical Appraisal (3)

2. *Teaching the mentally retarded*:

Education 171, Curriculum and Methods for Mentally Retarded Children	3
Art 10 or 110, Crafts in the Elementary School	3
(Education 172, Workshop for Teaching the Mentally Retarded, meets the requirements for Education 171 and Art 10 or 110 when taken for 6 units)	
Psychology 109, Mental Deficiency	3
Electives (a minimum of 3 units to be selected in consultation with adviser)	3
Total	12

By careful scheduling it is possible to earn this credential in either area of specialization concurrently with the basic credential. The student should plan carefully his schedule of studies with the education adviser for the credential if he wishes to finish the credential within the four-year undergraduate period. It may be necessary to attend summer school to achieve this.

HEALTH AND DEVELOPMENT CREDENTIAL

Application for the health and development credential should be made directly to the Credentials Office, State Department of Education, Sacramento, California. Students interested in preparing for this credential should consult the Chairman of the Division of Education, San Diego State College.

GENERAL PUPIL PERSONNEL SERVICES CREDENTIAL

In addition to the general requirements of the State of California for all credentials, the following are requirements for admission to the general pupil personnel services credential program:

1. Verification of a bachelor's degree granted by an institution accepted for credentialing purposes by the State Board of Education.
2. Verification of two years of successful teaching experience, or equivalent as stated in Title 5 of the California Administrative Code.
3. Satisfactory completion of at least two interviews with members of the Guidance Studies Committee of the Department of Education.
4. Presentation of a brief professional autobiography including a self-evaluation of potential as a pupil personnel worker.

The program of studies for the credential consists of a minimum of 30 semester hours of postgraduate work consisting of course work and field experiences in a general area and in at least one specialized area. It is possible for students to obtain the credential at San Diego State College in one or more of the following areas of specialization:

1. Pupil counseling
2. Child welfare and attendance
3. School psychometry
4. School psychology

Students desiring to meet the requirements as a school psychologist will be required (1) to meet the requirements of the general pupil personnel services credential in school psychometry and (2) obtain an additional year of graduate work in school psychology.

Further details on this credential are available in the Education Division Office of the college.

CURRICULA LEADING TO CREDENTIALS IN ADMINISTRATION AND SUPERVISION

Courses and field experience are available which lead to credentials in elementary and secondary administration and supervision. A selection and admission program is employed to select candidates for these credentials who have the promising background experiences and competencies necessary to enable them to serve in positions of supervision and administration.

GENERAL REQUIREMENTS FOR ADMINISTRATION AND SUPERVISION CREDENTIALS

In addition to the general requirements of the State of California for all credentials the following requirements are common for admission to and completion of all supervision and administration credentials:

1. Maintain a grade point average of 3.00 on all work applied toward the credential, exclusive of courses required for the basic credential.
2. Admission to the program of administrative studies, which includes:
   a. Completion of information on a personal data sheet and the filing of official transcripts of all college work. (Forms and information available in Division of Education Offices.)
   b. Completion of two counseling interviews with resident staff members teaching courses on the level, elementary or secondary, at which the candidate is working. The sequence of courses for the credential will be planned with the candidate at this time.
3. Admission to the program must be completed at any time previous to enrolling in Education 262, 263, 264, 265, 266, 267, and 316B.
4. Candidate should not enroll for more than three semester units of 200 numbered courses applied toward the credential during any single semester when he has a full-time teaching position.
5. Candidate must have completed a minimum of two full years of successful teaching experience before he may be admitted to courses in the core subjects, Education 262, 263, 264, 265, 266, 267, and 316B.

CURRICULA LEADING TO CREDENTIAL IN ELEMENTARY SCHOOL ADMINISTRATION

In addition to the requirements listed above, the candidate shall:

1. Possess a valid general elementary credential.
2. Present written evidence of two years of successful teaching experience on the elementary level.
3. Complete 30 semester units of upper division or graduate work in addition to the holding of the general elementary credential. These units shall include specific courses designated by the California State Board of Education and San Diego State College.
4. Complete a minimum of 15 units of postgraduate work in residence at San Diego State College.
5. Make formal application for an evaluation for the credential at San Diego State College and at the completion of all requirements, make application for the credential.

Course Requirements for the Elementary Administration Credential as Designated by the State Board of Education

A. Courses in undergraduate or graduate training (letters and numbers correspond with State Department Bulletin Credential Regulations):

1. The scope, functions, and place of the system of public education of elementary and secondary schools; rural and urban schools; vocational education; education for adults; special school programs; auxiliary agencies:
   Education 101 .... 2 units
2. Principles and practices of curriculum construction and evaluation:
   Education 240 or 245 .... 3 units

3. Measurement and appraisal of educational achievements and aptitudes:
   Education 151 .... 3 units
4. Pupil personnel, counseling and guidance, including techniques and practices of child study and parent education:
   Education 115 or 230 .... 3 units

B. Concurrently with or subsequently to teaching experience, graduate or undergraduate training shall include work in the following subject groups, including directed fieldwork of such a nature as to give the applicant first-hand knowledge of problems and issues as they exist in the public schools:

1. Federal, state, county and city school organization, administration, and supervision:
   Education 260 .... 3 units
2. School finance, business administration, and law:
   Education 270 .... 3 units
3. The organization and administration of elementary schools:
   Education 262 .... 3 units
4. Elementary school supervision:
   Education 264 .... 3 units
5. Fieldwork or internship in school administration and supervision:
   Education 266 or 316B .... 3–6 units

C. Elective courses in general or professional education to complete 30 units *after receiving the General Elementary Credential or the A.B. degree.*

CURRICULA LEADING TO CREDENTIAL IN SECONDARY SCHOOL ADMINISTRATION

In addition to the common requirements listed above, the candidate shall:

1. Possess a valid general secondary credential.
2. Present written evidence of two years of successful teaching experience on the secondary level.
3. Complete 18 semester units of upper division or graduate work in addition to requirements for the general secondary credential. These units shall include specific courses designated by the California State Board of Education and San Diego State College.
4. Complete a minimum of 12 units of postgraduate work in residence at San Diego State College.
5. Make formal application for an evaluation for the credential at San Diego State College and at the completion of all requirements make application for the credential.

Course Requirements for the Secondary Administration Credential as Designated by the State Board of Education

A. Courses in undergraduate or graduate training (letters and numbers correspond with State Department Bulletin Credential Regulations):

1. The scope, functions, and place in the system of public education of elementary and secondary schools; vocational education; education for adults; special school programs; auxiliary agencies:
   Education 100, or 101 and 102 .... 4–5 units
2. Principles and practices of curriculum construction and evaluation:
   Education 250 .... 3 units
3. Measurement and appraisal of educational achievement and aptitudes:
   Education 120 or 152 .... 2–4 units
4. Pupil personnel, counseling and guidance, including techniques and practices of child study and parent education:
   Education 230 .... 3 units

B. Concurrently with or subsequently to teaching experience, graduate or undergraduate training shall include work in the following subject groups, including directed fieldwork of such a nature as to give the applicant first-hand knowledge or problems and issues as they exist in the public schools:

1. Federal, state, county and city school organization, administration, and supervision: Education 260	3 units
2. Finance, law, business administration: Education 270	3 units
3. The organization and administration of secondary schools: Education 263	3 units
4. Supervision of instruction and curriculum in the secondary schools: Education 265	3 units
5. Directed fieldwork or internship in administration and supervision: Education 267 or 316B	3–6 units

C. Elective courses in general or professional education to complete 18 units in addition to completing requirements for the general secondary credential.

CURRICULA LEADING TO CREDENTIAL IN SUPERVISION

In addition to the general requirements previously listed for administration and supervision credentials, the candidate shall:

1. Possess a bachelor's degree granted by an institution accepted for credentialing purposes by the California State Board of Education and a valid regular California credential.
2. Present verification of desirable personal characteristics for supervision by two persons who have been associated with the applicant in a school administrative or supervisory relationship within the past five years.
3. Present verification by an accredited institution or the chief school administrator of a minimum of five years of successful public school service which the institution or school administrator certifies as constituting an adequate basis for supervision. Criteria shall include such items as superior teaching, curriculum development, community work, individual counseling, and breadth of experience in various grade levels or subject areas.
4. Complete 24 semester hours of postgraduate work of upper division or graduate level concurrent with or subsequent to public school service. Preparation shall include work in each of the following areas:
    a. Philosophy, methods and materials of the applicant's basic credential field with emphasis on how to help teachers in that field: Education 240 or 254 (3 units).
    b. Techniques of supervision: Education 264 or 265 (3 units).
    c. Dynamics of human behavior, group processes and skills of communication: Education 278 (3 units).
    d. Curriculum development: Education 240 or 250 (3 units).
    e. Community activities, including field practice in agencies especially interested in children and youth: Education 266, 267, or 316B (3 units).
    f. The instructional aspects of school plants and equipment, including planning and utilization: Education 262 or 263 (3 units).
    g. School finance and law: Education 270 (3 units).
    h. The responsibility and relationships of teachers, administrators, supervisors, and members of governing boards in the organization of the school system and in the profession: Education 207 or 260 (3 units).

BACHELOR OF EDUCATION DEGREE AND THE GENERAL ELEMENTARY CREDENTIAL

Provisions for the granting of the bachelor of education degree are made in the California Administrative Code, Title 5, Article 7, Section 921. Requirements for this degree are summarized as follows:

Purpose of the Degree. The purpose of this degree is to increase the professional competence of the individual as an elementary teacher in the California public schools. Through the curriculum provided, the applicant is guided into those learning experiences which best meet his cultural and professional needs on the basis of his previous preparation and of the services he is to render.

Eligibility for Candidacy. To be eligible to enter the program for this degree at San Diego State College the applicant must obtain full admission to the college, be admitted to the teacher education program of the college, must have completed a minimum of 60 semester units of standard college work acceptable toward the degree, and must hold a California provisional kindergarten-primary or provisional general elementary credential.

Requirements for the Degree. The candidate must complete a four-year college course of 124 semester units as defined by the college, must meet the grade requirements established by the college for a bachelor's degree and credential, and must include in his program the following requirements:

(1) General education .... 45 units

Courses in general education must be distributed as follows:

- (a) Social sciences 9
  Shall include required instruction in American history, institutions and ideals; U. S. Constitution; and California state and local governments; and courses selected from the fields of anthropology, economics, geography, history, political science, sociology, and similar fields. Courses must be selected from two or more of these fields.
- (b) Natural sciences 9
  Shall include the fields of astronomy, biology, botany, chemistry, geology, physics, physiology, zoology, and similar fields. At least one course must be selected from a physical science and one from a life science.
- (c) Literature, philosophy or the arts 6
  Courses in fine and practical arts shall not exceed 3 of these 6 units.
- (d) Health and physical education 2
- (e) Oral and written expression 3
- (f) Psychology 2
- (g) Additional units in general education 14
  May be selected in whole or in part from the foregoing six general areas or may include courses in family life education or mathematics or not more than 6 units in foreign language. At least one course in general education must include instruction in fire prevention.

(2) Teaching background, minimum .... 15 units

In addition to the 45 semester units required in general education, the teaching background in subject fields shall be selected according to the needs of the applicant, as prescribed by the teacher education department, with not less than 2 semester units in each of at least four of the following fields:

- (a) Art. Includes subject matter, laboratory or activity in the graphic or industrial arts.

- (b) English and speech. Includes oral and written expression, American or world literature, children's literature, dramatics, or use of books and libraries.
- (c) Physical education, health, and hygiene. Includes personal hygiene, first aid, health education, games, rhythms, or physical activities.
- (d) Mathematics.
- (e) Music.
- (f) Social science, including geography.
- (g) Natural science.

(3) Major .... 24 units

Shall include courses from each of the following areas:

- (a) General elementary school methods or methods of teaching basic elementary school subjects.
- (b) Principles of elementary education or elementary school curriculum.
- (c) Child psychology or child growth and development.
- (d) Other appropriate professional courses in education including instruction in the use and educational value of audio and visual aids.

(4) Credit for teaching experience .... 8 units

A maximum of 8 semester units may be allowed for directed teaching and/or teaching experience on the elementary school level. Credit for teaching experience may be allowed at the rate of four units for one year of verified successful teaching experience.

(5) Additional units required .... 32 units

Courses to complete the 124 units required for the degree shall be selected from those offerings of the college that best serve the cultural and professional needs of the candidate.

Total .... 124 units

Credits Based on Examination. A maximum of 30 units may be secured by examination in subjects included in the fields of study mentioned above. Students requesting credit by examination must comply with the provisions of the college established for this purpose. Refer to the section of this catalog on Credit by Examination.

Residence Requirements. A minimum of 24 semester units shall be earned in course work at San Diego State College (exclusive of credit by examination). Twelve of the 24 units must be in residence courses and must be secured after the candidate has earned at least 90 semester units.

BACHELOR OF VOCATIONAL EDUCATION DEGREE

ELIGIBILITY

The purpose of this degree is to promote the professional advancement of the vocational teachers of the State. Eligible candidates for this degree shall be limited to those vocational teachers who meet the requirement established in the Education Code of the State of California and who are recommended by the Board of Examiners for Vocational Teachers.

GENERAL REQUIREMENTS

The educational program for each applicant shall be determined by the College in terms of the needs of the individual applicant and the standards of the institution.

Each applicant for the degree shall have completed, with a grade point average of 2.0 (grade of C) or better, a course of 124 semester units, including the credits recommended by the Board of Examiners, and shall have met the general education requirements prescribed for the bachelor of arts or bachelor of science degree.

The candidate must also meet all institutional requirements prescribed for candidates for other bachelor degrees, including requirements in American history, institutions and ideals; U. S. Constitution; and California state and local government.

THE MAJOR

The credits recommended by the Board of Examiners for Vocational Teachers for the applicant's occupational, managerial and supervisory experience shall be applied toward a major in vocational arts. The vocational teacher training completed by the applicant may be used toward a minor in education or toward electives if some other minor is used.

RESIDENCE

The candidate for this degree must complete a minimum of 24 semester units in residence in this college, at least 12 units of which must be completed among the last 20 semester units counted toward the degree. Credit in summer sessions may be counted on a unit for unit basis toward this requirement.

ANNOUNCEMENT OF COURSES AND PROGRAMS OF STUDY

COURSE NUMBERS

Courses numbered from 1 to 99 are lower division (freshman or sophomore) courses; those numbered 100 to 199 are upper division (junior or senior) courses; those numbered 200 to 299 are graduate courses (see section on Admission and Registration for information concerning eligibility to enroll in these courses); those numbered 300 to 399 are professional education courses to be taken at the graduate level.

CREDIT FOR UPPER DIVISION AND GRADUATE COURSES

A student with lower division standing is not eligible to take upper division courses, with the following exceptions: A student in the last semester of his sophomore year who is approaching upper division standing and is carrying sufficient lower division units to complete the required minimum of 60 units may carry upper division units for the remainder of his study load. A student with sophomore standing may carry upper division courses for upper division credit provided that he has the written approval of the chairman of the department and the Dean of the College, or his authorized representative. This written approval must be filed in the Evaluations Office, Administration Building, on the Adjustment of Academic Record form, which may be obtained by the student at the Evaluations Office.

Enrollment and Credit in Graduate Courses

Enrollment in or credit for graduate level (200 numbered) courses is limited to students in regular graduate standing. Permission to enroll in or receive credit for these courses may be granted to unclassified graduates only with consent of instructor and concurrence of the Dean of Graduate Studies. Refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division for further information.

GENERAL EDUCATION COURSES

Course numbers preceded by an asterisk (*) are general education courses which mav be applied toward the 45 unit requirement in general education, unless specifically required as part of the major. Refer to the section of the catalog entitled: General Requirements for the Bachelor of Arts and Bachelor of Science Degrees.

UNITS

Figures in parentheses indicate the unit value of the course.

One "unit" represents 50 minutes of recitation or lecture, together with the required preparation, or three hours laboratory work or two hours of activities each week for a semester of 18 weeks.

SEMESTER IN WHICH COURSES ARE OFFERED

Roman numeral I indicates course is offered in Fall semester. Roman numeral II indicates course is offered in Spring semester.

Following the course title are designations of credit and the semester in which course is offered. Examples:

(3) I	Three units. Offered first semester
(3) I, II	Three units. Offered first semester and second semester
(3-3) Year	Three units each semester. Year sequence

Although the college fully expects to carry out the arrangements planned in the list of courses, it reserves the right to make changes. Classes in which the enrollment does not come up to the minimum number set by the State Department of Education may not be offered or may be postponed.

PREREQUISITES

Prerequisites for courses are stated. A student should not enroll in a course for which he is not eligible.

Admission to all 200-numbered courses requires regular graduate standing and permission of the instructor.

AIR SCIENCE

IN THE DIVISION OF AIR SCIENCE

Professor: Walker, Col. Lloyd A.
Assistant Professors: Brown, Major Charles E.; Brown, Capt. Donald D.; Donnelly, Major George W.; Wilson, Capt. Irvin B.

AIR FORCE RESERVE OFFICERS' TRAINING CORPS

The Department and Division of Air Science at San Diego State College offers the curriculum prescribed by the Air Force Reserve Officers' Training Corps. This curriculum consists of a four-year course, including a two-year lower division course and a two-year upper division course.

The objectives of the Air Force ROTC program are the development of qualities of leadership and character essential to civil and military responsibility, and the training of officers for the Air Force. Completion of the four-year course and a bachelor's degree satisfy the prerequisites for a commission in the Air Force Reserve. Students who have demonstrated outstanding qualities of scholarship and leadership are considered for regular commissions in the Air Force. Air Force ROTC graduates who are physically qualified may make application for the Air Force flying training program.

Flight instruction is offered as a part of the Air Force ROTC program to students in the senior year who are candidates for pilot training. This training includes 36½ hours of instruction at a Federal Aviation Agency approved civilian flying school leading to an FAA private pilot's license. The cost of this program is financed by the U. S. Air Force.

Eligibility for Admission to the Program

Eligibility: A regularly enrolled male student is eligible for admission to the air science program if he is a citizen of the United States, not less than 14 years of age, and physically qualified for military service. If programmed for flying training a student must complete all requirements for a commission upon graduation prior to reaching age 26 years, 6 months or 28 years if programmed for other than flying training. Successful completion of the lower division courses, or the equivalent thereof, and being qualified for enrollment in a category for commissioning, are prerequisite for enrollment in the upper division course. The lower division course, or portions thereof, may be waived on the basis of two years prior honorable active U. S. military service. Portions of the lower division courses may also be waived on a year-to-year basis as deemed equivalent to previous training received at one of the service academies or in the Senior Division of the Army or Naval ROTC. No portion of the lower division course may be waived which may be completed in phase with the academic standing prior to entrance into the upper division courses.

Registration in the Program. Freshmen students must register for the Air Science program as first semester freshmen to qualify for the full four-year program. If the ROTC was available to the freshman, he cannot get consideration for starting the program at a later date in his college career. Normally, a student entering the upper division course must have two years of college work remaining; however, the first semester junior year course may be taken concurrently with the last semester lower division course at the discretion of the Professor of Air Science. All applicants must pass required screening tests and be selected by the Professor of Air Science and the President of the College.

Summer Camp

Attendance at one summer camp is required of each student to qualify for the commission. The summer camp is four weeks in length and is held at an active Air Force base. The student receives $78 per month during this training period. Uniforms, equipment, subsistence, and transportation are furnished by the Air Force.

Allowances

Students in the lower and upper division courses are furnished uniforms, equipment, and textbooks for air science. Students in the upper division course are given an allowance of approximately $27 per month. Upon acceptance into the upper division program, the student executes a written agreement with the United States Government and with the President of the College to complete the upper division course, completion of such course becoming a prerequisite to graduation.

Lower and Upper Division Courses

The lower division course requires two hours of classroom instruction and one hour of leadership laboratory per week each semester. The upper division course requires four hours of classroom instruction and one hour of leadership laboratory per week each semester. In addition, each student in the upper division course must attend one summer camp of four weeks. The lower division course is primarily an education for citizenship in the air age. The upper division course prepares the student to assume the duties and responsibilities of junior officers in the U. S. Air Force.

Students enrolled in the AFROTC program pursue their regular courses of study in fields of their choice. Major work is not offered in air science, but a minor is offered or may be used as one of the fields for a general major.

MINOR IN ARTS AND SCIENCES

A minor in air science is offered in arts and sciences. The minor consists of 15 to 22 units in air science, seven units of which must be in courses carrying upper division credit.

LOWER DIVISION COURSES

*** 1A-1B. Foundations of Air Power I (2-2) Year Course Beginning Semester I**

Two lectures and one hour of leadership laboratory.

A general survey of air power designed to provide the student with an understanding of the elements and potential of air power; air vehicles and principles of flight; military instruments of national security; professional opportunities.

21A-21B. Foundations of Air Power II (2-2) Year Course Beginning Semester I

Two lectures and one hour of leadership laboratory.

Prerequisites: Air Science 1A and 1B.

A more advanced consideration of air power to include the evolution of aerial warfare; weapon system development; Air Force operations; the future of air power.

UPPER DIVISION COURSES

131A-131B. Leadership Principles and Practices (3-3) Year Course Beginning Semester I

Four hours lecture and one hour of leadership laboratory.

Prerequisites: Air Science 21A and 21B.

Introduces principles of leadership and employment of communication theory relevant to leadership; concentrates on important behavior skills basic to leader performance with provision for practice and development in a realistic problem situation. Two units of general education credit will be allowed for 131A.

133X. Summer Training Camp (3)

A four-week camp required of all advanced students; normally completed between junior and senior year. Credit granted through the Extension Division on basis of individual student application with approval of the Professor of Air Science.

141A-141B. Second Year Advanced (3-3) Year Course Offered Through 1959-60

Four hours lecture and one hour of leadership laboratory.

Prerequisites: Air Science 131A and 131B.

Semester I. Career guidance for USAF officers; leadership and management seminar; military aviation and the evolution of warfare; leadership laboratory. Two units of general education credit will be allowed for 141A.

Semester II. Military aspects of world political geography; briefing for commissioned service; leadership laboratory. Not open to students with credit for Geography 150.

141A-141B. Global Relations (3-3) Year Course Beginning Fall 1960
Four hours lecture and one hour of leadership laboratory.
Prerequisites: Air Science 131A and 131B.
A study of global relationships with attention to such aspects as weather, navigation, world political geography, and international relations; preparing the Air Force officer for active duty. Not open to students with credit for Geography 150.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of instructor.

ANTHROPOLOGY

IN THE DIVISION OF SOCIAL SCIENCES

Professor: Rogers, S. L.
Associate Professor: Ezell
Assistant Professor: Young

A major in anthropology is offered with the A.B. degree in *arts and sciences.* Courses in the major are in addition to 45 units in general education courses. Students majoring in anthropology are required to complete a minor for the bachelor's degree, as approved by the departmental adviser.

A minor in anthropology is offered in *arts and sciences.*

MAJOR

Lower Division. Anthropology 1, 2, and 3.

Upper Division. 24 upper division units in anthropology to include Anthropology 102, 103, 152, 154, and 167. Supporting courses should be chosen as follows: for **archaeology:** art, geography, geology, history; for **physical anthropology:** psychology, statistics, zoology; for **museum work:** art, education, psychology; for **ethnology** and social anthropology: history, language, psychology, political science, social science.

MINOR

The minor in anthropology consists of 15 to 22 units in anthropology, nine units of which must be in courses carrying upper division credit.

LOWER DIVISION COURSES

*** 1. Human Origins (3) I, II**
Man's place in nature; fossil evidences of early man; theories of human development; racial variability. A general education course in the social sciences. (Formerly Anthropology 1A.)

*** 2. Culture Origins (3) I, II**
Prehistoric cultures of Europe and the Middle East; archaeological techniques; basic inventions and cultural innovations; language and culture. A general education course in the social sciences. May be taken before Anthropology 1. (Formerly Anthropology 1B.)

*** 3. Primitive Societies (3) I, II**
Man's relationship to his environment; types of preliterate society; systems of family organization, government and religion. A general education course in the social sciences. May be taken before Anthropology 1 or 2.

UPPER DIVISION COURSES

102. Physical Anthropology (3) I
Prerequisite: Anthropology 1.
A review of primate comparative anatomy and human palaeontology. Racial anatomy and population genetics. Physical measurement of the living subject and skeletal specimens. The statistical treatment of data in physical anthropology. Applications of physical anthropology in industry and medico-legal problems.

103. Principles of Archaeology (3) II
Prerequisite: Anthropology 2.
The historic background and basic techniques of archaeological excavation. Methods of site excavation with particular emphasis on California and the Southwest. Principles of culture dynamics utilized in archaeological interpretation.

151A. The North American Indian (3) I
Prerequisite: Anthropology 2.
Pre-Columbian cultures of the North American Indian. The origin and migration of New World peoples. Industries, arts, crafts, social organization, religion and other phases of American Indian civilization.

151B. Indian Civilization of Middle America (3) II
The development of civilization in Pre-Columbian Mexico and Central America: Aztec, Mayan, and related cultures.

*** 152. World Ethnography (3) I**
Prerequisites: Anthropology 2 or 3, or Sociology 1, or consent of instructor.
The cultural patterns of representative aboriginal peoples. Industries, arts, social organization and supernaturalism considered with a view to environmental adjustment, historical development and functional interrelation. Ethnological theories reviewed and applied in interpreting illustrative aboriginal societies. A general education course in the social sciences.

153. Primitive Religion (3) II
Beliefs and ritual of primitive man. Magic and religion. Forms of animism and polytheism. Primitive mentality and the supernatural.

154. Social Anthropology (3) I
Prerequisite: Anthropology 2 or 3, or Sociology 1.
A study of the methods and findings in some of the major problem areas of anthropology. Cross cultural comparisons, the integration of culture, relation to personality, acculturation and analysis of cultural changes. A general education course in the social sciences. (Formerly Anthropology 54. Not open to students with credit in this course.)

156. Cultural Change and Processes (3) II
Prerequisites: Anthropology 1 or 2.
The individual and the culture pattern: the acquisition of culture, innovation and invention, direction of cultural development, diffusion and interpenetration of cultures. Illustrations from contemporary and historic peoples: Indians of the Southwest, Eskimos, aboriginal groups of Australia, Africa and Oceania.

161. The California Indian (3) Summer
(Not offered 1959-60)
A survey of native California Indian culture with stress on the Indian groups of Southern California. The industries, arts, social organization, folklore and religion will be considered as revealed through the study of living peoples and archaeological evidences.

162. Cultures of South America (3) II
Prerequisite: Anthropology 2 or 3.
Survey of Indian cultures in terms of origins, migration, relation to habitat, cultural variation and relevance to contemporary trends. Development of Inca civilization, the effects of the Spanish conquest and its aftermath.

165. Physical and Cultural Backgrounds of Personality (3) I
Prerequisite: Anthropology 1 or Sociology 1.
Race and culture; variation in human structure and function; variation and patterning of culture; relation to personality; physical and cultural factors in personality formation; history and current problems of this area. (Formerly offered under the title: Ethnology and Race Psychology.)

166. Honors Course I, II (Credit to be arranged)
Refer to the Honors Program.

167. History of Anthropological Theory (3) I
(Not offered 1959-60)
Prerequisites: Anthropology 1, 2, or 3.
A review of the development of theories which lie behind the modern sciences of ethnology and archaeology. Applications of the theory of culture to field methods and interpretation of findings.

169-S. Backgrounds of Mexican Civilization (3) Summer
Mexico's archaelogical past and its bearing on historic and recent peoples and cultures. Conflicts between Aztec and Mayan cultures and western civilization. The relationship of Mexican civilization to other Latin American cultures.

172. Indian Cultures of the Southwest (3) II
Prerequisites: Anthropology 2 or 3, or consent of instructor.
Indian cultures of the past and present in the Southwestern states. Arts, crafts, architecture and religion as revealed through archaeology and ethnology.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of instructor.

ART

IN THE DIVISION OF FINE ARTS

Professors: Jackson (Chairman); Sorenson; Swiggett
Associate Professors: Dirks; Ruocco
Assistant Professors: Bigelow; Lingren; Longenecker; Tanzer; Wallace, R. D.
Lecturer: Wallen

A major in art is offered with the A.B. degree in *arts and sciences*. The following majors are offered in *teacher education*: a teaching major with the A.B. degree and special secondary credential and a teaching major leading to the general secondary credential in the postgraduate year. Courses in the art major for the bachelor's degree are in addition to 45 units in general education courses.

Students taking an art major are not required to complete a minor for the bachelor's degree. Students who plan to take the general secondary credential with a major in art are advised to include in the undergraduate program a teaching minor for the credential.

A minor in art is offered in *arts and sciences*. A teaching minor in art is offered in *teacher education* for the general secondary credential.

MAJOR IN ARTS AND SCIENCES

The major in art may be planned with an emphasis on crafts or on graphic arts. The program with emphasis on crafts leads in the direction of industrial design, interior design, cabinet making, sculpture, weaving, textile design, ceramics, etc. The program with emphasis on graphic arts leads in the direction of illustration, portraiture, landscape painting, mural design, poster design, production illustration, advertising design, fashion design, etc. The student must complete the basic requirements plus the requirements in the selected field of emphasis.

Basic Requirements

All art majors must complete the following courses: Art A, B, 6A, 6B, 14A, 50, and 5 or 51. In addition to these courses, the student must complete the requirements in one of the fields of emphasis listed below.

Emphasis on Crafts

In addition to the basic requirements, the student emphasizing crafts shall complete the following courses: Lower division: Art 7, 13, 61B, and two units of art electives. Upper division: 24 upper division units to include Art 106A, 111A, 113, four units of 117, 119A-119B, 150, and eight units of upper division art electives.

Emphasis on Graphic Arts

In addition to the basic requirements, the student emphasizing graphic arts shall complete the following courses: Lower division: Art 15A, 16A, and four units of art electives. Upper division: 24 upper division units to include Art 106A, 112A-112B, four units of 115, four units of 116, two units of 117, 150, and six units of upper division art electives.

MINOR IN ARTS AND SCIENCES

A minor in art is offered in arts and sciences. The minor consists of 15 to 22 units in art, six units of which must be in courses carrying upper division credit.

MAJORS IN TEACHER EDUCATION

Special Secondary Credential in Art

Special Secondary Credential in Art. Students taking this credential must complete a teaching major in art and additional requirements in professional courses in teacher education.

Requirements in the Major. Lower division: Art A, B, 6A, 6B, 14A, 50, 5 or 51, 61A, 61B, and six to eight units of art electives (24-26 units). Upper division: Art 106A, 112A, two units of 115, two units of 116, 119A, 150, 194A, 195A, Speech Arts 140A, and three units of upper division art electives (22 units).

Professional Courses in Teacher Education. 24 upper division units to include Education 100, 110, 120, 180, 130B, 121A, and Health Education 151.

General Secondary Credential

Major for the General Secondary Credential. A teaching major in art is offered for the general secondary credential. Students may complete requirements for this major and the general secondary credential in one of the following ways:

(1) By taking the special secondary credential in art with the A.B. degree; completing requirements in a teaching minor for the general secondary credential; and completing other credential requirements in a postgraduate year, to include four graduate units in art to be approved by the department.

(2) By completing an art major in arts and sciences with the A.B. degree and including in the major or adding to the major, when necessary, the following courses: Art 61A-61B, 106A, 112A, 116, 119A, 194A, 195A, and Speech Arts 140A; a teaching minor for the general secondary credential; and the credential requirements in a postgraduate year, to include four graduate units in art to be approved by the department.

Refer to the section of the catalog on Professional Curricula in Teacher Education for a description of requirements in the postgraduate year.

MINOR IN TEACHER EDUCATION

General Secondary Credential

Minor for the General Secondary Credential. A teaching minor in art is offered in teacher education for the general secondary credential. This minor, which may be used for the bachelor's degree, consists of a minimum of 21 units, exclusive of course equivalents, to include the following courses: Lower division: Art A, B, 6A, 6B, 50, 5 or 51, and three units of art electives (Art 14A is recommended). Upper division: Art 150 and four upper division units of art electives.

THE MASTER'S DEGREE

The master of arts degree with a major in art and the master of arts degree for teaching service with a concentration in art are offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

ART APPRECIATION, HISTORY AND ORIENTATION

Many students, regardless of the field in which they may be majoring, recognize the need for an intelligent approach to the subject of art and art appreciation. However, due to the erroneous popular feeling that art is a subject requiring "talent," these students may refrain from enrolling in art courses. For students who desire a better understanding of art, but who do not hope to acquire any of the art skills, the following courses are recommended:

	Units
Art 5, Art Orientation	2
Art 50, History and Appreciation of Art	2
Art 51, Survey of Art of the Middle Americas	2
Art 52A-52B, Survey of Oriental Art	6
Art 8, Costume and House Furnishings	2

Other courses which require certain skills but which are not beyond the ability of the average college student are:

Art 61B, Crafts	2
Art 6A, Design	2
Art A, Drawing and Composition	2
Art 94, Costume design	2

LOWER DIVISION COURSES

***A. Drawing and Composition (2) I, II**

Six hours. No prerequisite.

Problems involving perspective to develop ability to draw still life, furniture, exteriors, interiors, and the like. (High school equivalent may excuse the student from this course.) A general education course in literature, philosophy, and the arts.

***B. Drawing and Composition (2) I, II**

Six hours.

Prerequisite: Art A.

Drawing of mechanical and natural forms by the use of line and value. Emphasis on proportion and structure. Some quick sketching, gesture and contour drawing. A general education course in literature, philosophy, and the arts.

***5. Art Orientation (2) II**

Two lectures. No prerequisite.

An illustrated lecture course dealing with aesthetic meaning and its relation to the structure of art products. Designed to increase both understanding and appreciation of the visual world in general and of the fine arts in particular. A general education course in literature, philosophy, and the arts. (Formerly offered as Aesthetics 5. Not open to students with credit in this course.)

***6A. Design (2) I, II**

Five hours. No prerequisite.

Fundamentals of design and composition and theory of color. Basic course used as a prerequisite for all advanced work. A general education course in literature, philosophy, and the arts. Not open to students with credit for Art 9.

6B. Design (2) I, II

Five hours.

Prerequisite: Art 6A.

Original work in creative design and representation with special stress on modern tendencies.

7. Line, Color and Display (2) I, II

Six hours. No prerequisite.

The principles of line, color and arrangement applied to store and window display. Study and observation of windows, color and materials used in display. Building models and practical problems in arranging colors, textures, and forms in windows to fit different kinds of merchandise. (Students who may later wish to apply for upper division credit for this course as applied to a major will be required to do additional work.) This course is not open to students with credit for Bus. Adm. 159 or Art 107.

***8. Costume and House Furnishings (2) I, II**

Two lectures. No prerequisite.

An appreciative study of modern architecture and modern house furnishings, with emphasis on the spirit of gracious living and an appreciative study of the modern dress with emphasis on suitability to the figure, the personality and the occasion. A general education course in literature, philosophy, and the arts.

9. Design for Teachers (3) I, II
Six hours. No prerequisite.
A fundamental course in design introducing students to the aesthetic use of color and spacing and including those special skills and the handling of those materials required for teaching in the elementary schools. Not open to students with credit for Art 6A or 6B.

10. Crafts in the Elementary Schools (3) I, II
Six hours.
Prerequisite: Art 9.
A basic craft course approached from the creative viewpoint and employing the techniques, materials and tools appropriate for the elementary grades. Not open to students with credit for Art 61A, 110, or 161A.

***13. Furniture Design (2) I, II**
Six hours.
Prerequisite: Art 6A.
Study of the principles of design through the making of furniture. A general education course in literature, philosophy, and the arts. (Formerly Art 6D.)

14A. Lettering (2) I
Six hours.
Prerequisite: Art 6A.
Fundamental art principles applied to lettering. Practice for quick, accurate lettering; original problems using letters as design.

14B. Posters and Commercial Art (2) II
Six hours.
Prerequisite: Art 14A.
The application of lettering to posters, newspaper and magazine advertising, and other forms of commercial art. The study of composition combined with lettering and special study of modern tendencies in publicity.

15A-15B. Life Drawing (2-2) Year Course Beginning Either Semester
Six hours.
Prerequisite: Art B. Art 15A is a prerequisite for 15B.
Drawing from the nude model.

***16A. Oil Painting (2) I, II**
Six hours.
Prerequisite: Art B or consent of instructor.
Composition of still life and landscape in color. A general education course in literature, philosophy, and the arts.

16B. Oil Painting (2) I, II
Six hours.
Prerequisite: Art 16A.
Landscape and more advanced composition in color.

17A-17B. Sculpture (2-2) Year Course Beginning Either Semester
Six hours.
Prerequisite: Art 6B or consent of instructor.
Creative design in such materials as clay, wood, stone, concrete, etc.

***18A. Watercolor Painting (2) I, II**
Six hours.
Prerequisite: Art B or consent of instructor.
Composition of still life and landscape in watercolor. A general education course in literature, philosophy, and the arts.

18B. Watercolor Painting (2) I, II
Six hours.
Prerequisite: Art 18A.
Composition of still life and landscape in watercolor.

***50. Appreciation and History of Art (2) I**
Two lectures. No prerequisite.
A survey of art development in painting, sculpture, architecture, and handicrafts from the dawn of art to the Renaissance. Illustrated. A general education course in literature, philosophy, and the arts. (Formerly offered as Aesthetics 50. Not open to students with credit in this course.)

***51. Survey of Art of the Middle Americas (2) I**
Two lectures. No prerequisite.
A study of Mexican and Middle American art from earliest time to the present. A general education course in literature, philosophy, and the arts. (Formerly offered as Aesthetics 51, Survey of Mexican Art. Not open to students with credit in this course.)

***52A-52B. Survey of Oriental Art (3-3) Year Course Beginning Semester I**
Three lectures.
Prerequisite: Art 52A is a prerequisite for 52B.
A study of the art of the great cultures of the Orient. A general education course in literature, philosophy, and the arts. (Formerly offered as Aesthetics 52A-52B. Not open to students with credit in this course.)

61A. Crafts (2) I, II
Five hours.
Prerequisite: Art 6A.
A foundation course which develops unification of work on the elementary school level; includes work with clay; lumber and tools, textiles, and cardboard construction. Designed for special secondary art majors and recreation majors. Not open to students with credit in Art 10, 110, or 161A.

61B. Crafts (2) I, II
Five hours.
Prerequisite: Art 6A.
Problems involving the application of design principles to various fields—pottery, textiles, weaving, metal work, wood carving, and bookbinding.

94A-94B. Costume Design (2-2) Year Course Beginning Either Semester
Six hours.
Prerequisite: Art 6A. Art 94A is a prerequisite for 94B.
Original designs of modern costumes suitable to the individual or to distinct types; the drawing of fashion figures; the rendering of fabrics and textures.

95A-95B. Interior Design (2-2) Year Course Beginning Either Semester
Six hours.
Prerequisites: Art A and 6A. Art 95A is a prerequisite for 95B.
The consideration of the house as a unit; the arrangement of garden, house, floor plan and furniture as functional and decorative problems.

UPPER DIVISION COURSES

105-S. Classroom Display for Teachers (3) Summer
A lecture and workshop course for elementary and secondary teachers in principles and techniques of modern display to meet various subject, classroom, and school requirements. Special attention to individual problems and needs.

106A-106B. Printmaking (2-2) Year Course Beginning Semester I
Six hours.
Prerequisites: Art B and 6A. Art 106A is a prerequisite for 106B.
Study of print crafts which includes the making of wood engravings, etchings, lithographs, and silk screen prints.

106C. Illustration (2) II
Six hours.
Prerequisites: Art B and 6A.
Same as 106A-B except that printmaking is applied to problems of book illustration.

107. Color and Design in Merchandise (2) I, II
(Same course as Bus. Adm. 159)
Six hours. No prerequisite.
Principles of line, mass, and color applied to the design of manufactured goods, especially consumer goods, and to merchandise display. Shape and color in relation to utility and sale value. Practical problems. Not open to students with credit for Bus. Adm. 159 or Art 7.

110. Advanced Crafts in the Elementary Schools (2) I, II
Five hours.
Prerequisite: Art 6A.
An advanced design-craft course in which the activities, materials and tools employed are appropriate for the elementary grades. Not open to students with credit for Art 10, 61A, or 161A.

111A-111B. Industrial Design (2-2) Year Course Beginning Either Semester
Six hours.
Prerequisite: Art 6B or consent of the instructor. Art 111A is a prerequisite for 111B.
Design of objects for manufacture with reference to their use, materials, and in accordance with factory practices and machine techniques. Practice in the techniques of presentation, working drawings, rendering in perspective and scale models.

112A. Design and Composition (2) I
Six hours.
Prerequisites: Art B and 6B.
Structure in picture making. The controlled use of line, value, color, and texture to organize the effect of depth, movement, volume, etc., in the recognizable image. Oil technique.

112B. Design and Composition (2) II
Six hours.
Prerequisite: Art 112A or consent of instructor.
Continuation of Art 112A.

113. Advanced Furniture Design (2) I, II
Six hours.
Prerequisite: Art 13 or consent of instructor.
Study of the principles of design through the making of furniture. (Formerly Art 106D.

114A. Design for Advertising (2) I
Six hours.
Prerequisite: Art 14B or consent of instructor.
Advanced course for advertising design students. Aims to develop professional concepts and techniques through student projects.

114B. Advanced Advertising Design (2) II
Six hours.
Prerequisite: Art 114A.
Advanced study with emphasis on the development of a portfolio of advertising design samples by the individual student.

115. Life Drawing and Painting (2) I, II
Six hours.
Prerequisite: Art B.
Drawing and painting from nude and costume models. May be repeated to a maximum of eight units.

116. Advanced Painting (2) I, II
Six hours.
Prerequisite: Art 16A or 16B.
Painting in oil from still life, landscape, or models, stressing composition. May be repeated once for credit.

117. Advanced Sculpture (2) I, II
Six hours.
Prerequisites: Art 6B and 17A or 17B.
Creative design in such materials as clay, wood, stone, concrete, etc. May be repeated once for credit.

119A. Ceramics (2) I
Six hours.
Prerequisite: Art 6A.
Building of pottery on the basic techniques of coil, slab, mold making, and slip casting. Ceramic sculpture, glazing and kiln operations.

119B. Ceramics (2) II
Six hours.
Prerequisite: Art 119A.
Study of glazes and elementary clay technology. Mold making, slip casting with application to individual creative problems.

119C. Ceramics (2) II
Six hours.
Prerequisite: Art 119B.
Continuation of Art 119B.

120A-120B. Advanced Design (2-2) Year Course Beginning Either Semester
Six hours.
Prerequisites: Art B and 6B. Art 120A is a prerequisite for 120B.
Advanced work in pure design, two and three dimensional. Re-examination of color theory and design principles.

***150. Appreciation and History of Art (2) II**
Two lectures. No prerequisite.
The period from the Rennaissance through the modern school treated in the same manner as in Art 50. A general education course in literature, philosophy, and the arts. (Formerly offered as Aesthetics 150. Not open to students with credit in this course.)

166. Honors Course (Credit to be arranged) **I, II**
Refer to the Honors Program.

175. Problems in Art for Teachers (1-3) I, II, Summer
Prerequisite: Consent of instructor.
Special problems in design adapted to the needs of teachers in service. May not be used to satisfy any pattern requirement for a credential. May be repeated once for credit.

194A-194B. Costume Design (2-2) Year Course Beginning Either Semester
Six hours.
Prerequisite: Art 6A. Art 194A is a prerequisite for 194B.
Original designs of modern costumes suitable to the individual or to distinct types; the drawing of fashion figures; the rendering of fabrics and textures.

195A-195B. Interior Design (2-2) Year Course Beginning Either Semester
Six hours.
Prerequisite: Art A and 6A. Art 195A is a prerequisite for 195B.
The consideration of the house as a unit; the arrangement of garden, house, floor plan and furniture as functional and decorative problems.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of the instructor.

GRADUATE COURSES

216. Seminar in Creative Painting (3) I, II
Prerequisites: Art 112A, 112B and two units of Art 116; or four units of Art 116.
Aesthetic organization of selected visual subject matter in the medium of colors in oils. May be repeated to a maximum of six units.

217. Seminar in Creative Sculpture (3) I, II
Prerequisites: Four units in Art 117.

Aesthetic organization of selected subject matter in the media of sculpture. May be repeated to a maximum of six units.

219. Seminar in Creative Crafts (3) I, II
Prerequisites: Six units completed in upper division courses in sculpture or ceramics or a combination of the two subjects.

Advanced creative work in selected craft media. May be repeated to a maximum of six units.

290. Bibliography (1) I, II
Exercises in the use of basic reference books, journals, and specialized bibliographies, preparatory to the writing of a master's project or thesis.

292A-292B. Seminar in Art History (3-3) I, II
Prerequisites: Art 50 and 150 or equivalents.

An intensive study of the development of art styles in selected historical periods.

294A-294B. Seminar in the Principles of Design in the Space Arts (3-3) I, II
Prerequisite: A semester course in art appreciation.

An intensive study of the activity of creative expression and aesthetic appreciation in the area of visual experience. The aesthetic analysis of original works of art.

298. Special Study (1-6) I, II
Individual study. Six units maximum credit.

Prerequisite: Consent of the staff; to be arranged with department chairman and the instructor.

299. Thesis or Project (3) I, II
Prerequisites: An officially appointed thesis committee and advancement to candidacy.

Guidance in the preparation of a project or thesis for the master's degree.

ASTRONOMY

IN THE DIVISION OF PHYSICAL SCIENCES

Professor: Smith, C. E.
Assistant Professor: Silvernail
Lecturer: Krieger

Major work is not offered in astronomy. Students desiring to prepare for advanced work in astronomy should include the following courses: Astronomy 1, 2, 9, and 10; Mathematics 50, 51, 52; Physics 4A-4B-4C; a reading knowledge of French and German.

Interested students can very well prepare themselves for careers in the new science of *astronautics*, or the field of *astrophysics*, by combining a minor in astronomy with major work in mathematics and/or physics, possibly including also upper division chemistry courses.

MINOR

A minor in astronomy is offered in arts and sciences. The minor consists of 15 to 22 units in astronomy, nine units of which must be in courses carrying upper division credit.

LOWER DIVISION COURSES

***1. Descriptive Astronomy (3) I, II**
A cultural course planned to develop an appreciation of astronomy with emphasis on the solar system. Attention is given to the methods by which astronomical knowledge has been gained. A six-inch refractor and a 12-inch reflecting telescope are available for observation. A physical science course in general education in the area of the natural sciences.

***2. Modern Astronomy (3) II**
Prerequisite: Astronomy 1 or consent of instructor.

A study of the stellar system in the light of modern research, especially photographic and spectrographic. A physical science course in general education in the area of the natural sciences.

***9. Practice in Observing (1) I, II**
Three hours of laboratory.
Recommended prerequisite: Astronomy 1 or concurrent registration in Astronomy 1 or Physical Science 1 or 5.
A course designed to supplement Astronomy 1. The course will include constellation sudy, use of astronomical co-ordinates, and descriptive observations of celestial objects with the telescope. This is a physical science course in general education in the area of the natural sciences. Meets the laboratory requirement in general education.

10. Advanced Observational Astronomy (1) II
Three hours of laboratory.
Prerequisite: Astronomy 9.
A continuation of Astronomy 9. More advanced problems in observing will be taken up such as the determination of latitude by observations of Polaris, transit observations, astronomical photography, etc.

12. Elementary Navigation (3) I
Three hours of laboratory.
Prerequisites: Astronomy 1 and 9 are desirable.
A study of compass corrections, time, line of position, use of celestial co-ordinates, etc. A few class hours devoted to the use of tables such as H.O. 214 for the solution of astronomical triangles.

UPPER DIVISION COURSES

103. Astronomical Optics (3) II
Two lectures and three hours of laboratory.
Prerequisites: Astronomy 1 and Physics 4C or 2B and 3B.
Theory and applications of optical instruments used in astronomy. In the laboratory the students are required to complete an approved project in optical instrumentation.

***105. Historic Development of Astronomy (3) I**
A study of the more important problems and astronomical concepts in the light of their historical development. Particular attention is given to the biography and contributions of the more important astronomers, such as Galileo, Kepler, Newton, Herschel, Bessel, etc. A physical science course in general education in the area of the natural sciences.

107. Method of Least Squares and Computing Practices (3) I
Prerequisite: Mathematics 52.
Fundamental principles with applications in the fields of astronomy, physics, and engineering.

110. Introduction to Study of Variable Stars (3) II
Two lectures and three hours of laboratory.
Prerequisite: Astronomy 2. Astronomy 9 is desirable.
A study will be made of the various types of variable stars, their spectra, periods, methods of observing, etc. In the laboratory the light curve of several typical variables will be observed.

112. Elementary Astrophysics (3) I
Prerequisite: Astronomy 2 or college physics.
A lecture course in the application of physics to astronomy. An occasional laboratory period will be substituted by appointment for the lecture period.

113. Surveyor's Course in Practical Astronomy (3) II
Two lectures and three hours of laboratory.
Prerequisite: Engineering 2 or consent of instructor. Astronomy 1 and 9 desirable.
The principles of spherical astronomy adapted to the needs of engineering students. Computation and observation.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisites: Three units in astronomy and consent of instructor.

BIOLOGY

IN THE DIVISION OF LIFE SCIENCES

Faculty assigned to teach courses in biology are drawn from the departments of Botany, Microbiology, and Zoology.

Major or minor work in biology is not offered; however, courses in biology are included in the botany, life science, microbiology, and zoology majors.

THE MASTER'S DEGREE

The master of arts degree with a major in biology, the master of arts degree for teaching service in life science with a concentration in biology, and the master of science degree in applied biology are offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

LOWER DIVISION COURSES

***1. The Ideas of Biology (3) I, II**

General concepts of biology with emphasis on the biology of man in relation to modern life. A life science general education course in the area of natural sciences. This course does not meet the laboratory requirement in natural science for general education. Not open to students with credit for Biology 3, 4 or 5, Botany 1, or Zoology 1.

***3. Principles of Biology (3) I, II**

Two lectures and three hours of laboratory. No prerequisite.

A consideration of basic biological phenomena. A life science general education course meeting the laboratory requirement in natural science for general education. Not open to students with credit for Biology 1 or 5, Botany 1, or Zoology 1.

***4. Natural History of Plants and Animals (3) I, II**

Two lectures and three hours of laboratory. No prerequisite.

An introduction to plants and animals in relation to their environments and to one another, with emphasis on local forms and their habitats. A life science general education course meeting the laboratory requirement in natural science for general education. Not open to students with credit for Biology 5, Botany 1, or Zoology 1.

5. Fundamentals of Biology (5) I, II

Three lectures and six hours of laboratory.

Prerequisite: High school chemistry is recommended.

Major biological concepts common to the areas of botany, microbiology, and zoology. Students with credit for Biology 3 or 4 may enroll, but will receive only two additional units of credit.

15. Introduction to Quantitative Biology (3) I, II

Two lectures and three hours of laboratory.

Prerequisites: Two years of high school algebra, one year of high school chemistry, and one semester of college biological science.

Methods and experience in defining and solving quantitative problems in biology.

UPPER DIVISION COURSES

101. General Physiology (4) I, II

Two lectures and six hours of laboratory.

Prerequisites: Biology 5, or 3 and 4; Biology 15; Chemistry 1A-1B or 2A-2B; Physics 2A-2B and 3A-3B.

The physiological processes at the cellular, tissue and organ levels. (Formerly Zoology 101.)

102. Principles of Taxonomy (2) I

Prerequisite: Biology 15.

The classification of living organisms. Rules of botanical and zoological nomenclature, type categories, principles, and procedures.

103. General Cytology (4) I
Two lectures and six hours of laboratory.
Prerequisites: Biology 5, or 3 and 4; Biology 15; Chemistry 1A-1B or 2A-2B.
The structure and function of cells and cell inclusions of plants and animals, including the chemical and physical properties of protoplasm and cytological methods.

110. Ecology (4) II
Two lectures and six hours of laboratory.
Prerequisites: Zoology 1 and Botany 1, or Biology 5, or Biology 3 and 4; Biology 15; Chemistry 1A-1B or 2A-2B.
Relationships between organisms and the environment; field study in local marine, fresh water, mountain, chaparral, and desert habitats.

111. Aquatic Biology (4) I
(Not offered 1959-60)
Two lectures and six hours of laboratory.
Prerequisites: Biology 5, or 3 and 4; Biology 15; Chemistry 1A-1B or 2A-2B.
Biological, chemical and physical considerations of inland waters.

112. Fishery Biology (2) I
Prerequisite: Biology 15.
Theory and practices of fishery management. Life historics and biology of important game and food fishes.

134. Microtechnique (3) I
One lecture and six hours of laboratory.
Prerequisites: One year of college chemistry and Biology 3 or 5, or Botany 1, or Zoology 1.
Introduction to methods of preparation of plant and animal tissues for microscopic study.

135. Scientific Illustration (3) I
Two lectures and three hours of laboratory; field trips.
Preparation of illustrative materials, inked drawings, charts, lettering models, still and movie photography, and photomicrography; field trips.

150A-150B. Radiation Biology (2-2) Year Course Beginning Semester I
(Not offered 1959-60.)
Prerequisites: Physics 148A and a college course in biology. Biology 150A is a prerequisite for 150B.
The effects of ionizing radiation on biological systems at the cellular, multicelluar, and population levels with a discussion of other electromagnetic phenomena where relevant, followed by the theory and application of tracer technique to biology.

155. Genetics (4) I, II
Two lectures and six hours of laboratory.
Prerequisites: Biology 1 or Zoology 1 or Biology 3, and Biology 15.
Principles of plant and animal genetics, with experiments and demonstrations illustrating the mechanisms of heredity.

158. Conservation of Wildlife (3) II
Prerequisite: A college course in biology or consent of instructor.
A survey of plant and animal resources with emphasis on their conservation and intelligent use.

160. Experimental Evolution (3) I
Two lectures and three hours of laboratory.
Prerequisite: Biology 15.
The theories of evolution and speciation with emphasis on the methods of study of modern problems.

***161. History of Biology (3) I, II**
Prerequisite: A college course in biology.
Lectures and reports tracing biological scientific development, with emphasis on the influence of personalities and trends of the times.

167. Biology for Elementary School Teachers (3) I
(Not offered 1959-60.)
Two lectures and three hours of laboratory.
Prerequisites: A college course in biology and admission to elementary education.
A comprehensive approach to the study of living things, including the identification, adaptations, life histories, distribution and value of the more common animals and plants.

170-S. Contemporary Problems in Biology (1) Summer
A series of six weekly lectures on varied aspects of biology by scientists engaged in research. Reading and reports required of students enrolled for credit. These lectures are open to the public. May be repeated for a total of 3 units.

198. Methods of Investigation (2) I, II
One hour of discussion and three hours of laboratory.
Prerequisites: Junior standing and a major in the Division of the Life Sciences.
Individual and original investigations in biology; class reports. Four units maximum credit.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of instructor.

GRADUATE COURSES

210. Seminar in Cellular Biology (2)
Prerequisite: Biology 101 or 103, or consent of instructor.

220. Seminar in Growth and Development (2)
Prerequisite: Zoology 100 or consent of instructor.

230. Seminar in Speciation (2)
Prerequisite: Biology 155 or 160, or consent of instructor.

240. Seminar in Ecology (2)
Prerequisite: Biology 110 or 112, or consent of instructor.

250. Seminar in Biogeography (2)
Prerequisite: Biology 110 or 160, or consent of instructor.

260. Seminar in General Physiology (2)
Prerequisite: Biology 101 or Botany 107, or consent of instructor.

270. Seminar in Genetics (2)
Prerequisite: Biology 155 or consent of instructor.

290. Bibliography (1) II
Exercises in the use of basic reference books, journals, and specialized bibliographies, preparatory to the writing of a master's project or thesis.

296. Directed Field Experience (1-6) I, II
Experience in local laboratories, under supervision. Meets requirements of directed field experience for candidates for the master of science degree. This course or its equivalent required in addition to the 30 units specified for the degree.

298. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of staff; to be arranged with department chairman and instructor.

299. Thesis (3) I, II
Prerequisites: An officially appointed thesis committee and advancement to candidacy.
Guidance in the preparation of a project or thesis for the master's degree.

BOTANY

IN THE DIVISION OF LIFE SCIENCES

Associate Professors: Gallup; Preston
Assistant Professors: Harvey, D. R. (Chairman); Norland

A major in botany is offered with the A.B. or B.S. degree in *arts and sciences.* Courses in the major are in addition to 45 units in general education courses, unless otherwise specified. A minor is not required of botany majors for the bachelor's degree.

A minor in botany is offered in *arts and sciences.*

MAJORS

Major With the A.B. Degree

Lower Division. Biology 5, or Biology 3 and 4; Biology 15; Botany 50 and 51; Chemistry 1A-1B or 2A-2B. Recommended: German, French, or Spanish, Microbiology 1 or 101, and Geology 1A-1B or 2 and 3. Nine units in the natural sciences may be counted in general education.

Upper Division. 24 upper division units, at least 18 of which must be in botany and biology, including Botany 107, 114, and six units of which may be in related courses in microbiology, chemistry, geology, and zoology, selected with the approval of the departmental adviser.

Major With the B.S. Degree

Lower Division. Biology 5, or Biology 3 and 4; Biology 15; Botany 50 and 51; Chemistry 1A-1B or 2A-2B. Recommended: German, French, or Spanish, Microbiology 1 or 101, and Geology 1A-1B or 2 and 3. Nine units in the natural sciences may be counted in general education.

Upper Division. 36 upper division units in botany and related fields, including Botany 107, 114, and Biology 155. Chemistry 101A and Biology 161 are strongly recommended.

MINOR

A minor in botany is offered in arts and sciences. The minor consists of 15 to 22 units in botany, six units of which must be in courses carrying upper division credit.

THE MASTER'S DEGREE

The master of arts degree in botany, the master of arts degree for teaching service in life science with a concentration in botany, and the master of science degree in applied biology are offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

LOWER DIVISION COURSES

50. Nonvascular Plants (4) I

Two lectures and six hours of laboratory.

Prerequisite: Biology 5.

The development and phylogenetic relationships of the algae and fungi. (Formerly Botany 101A.)

51. Vascular Plants (4) II

Two lectures and six hours of laboratory.

Prerequisite: Biology 5.

The structure, development and phylogenetic relationships of the Bryophytes and vascular plants. (Formerly Botany 101B.)

UPPER DIVISION COURSES

104. Plant Anatomy (3) I

Two lectures and three hours of laboratory.

Prerequisite: Biology 5.

The arrangement of structural elements within plant organs, with emphasis on cell and tissue types.

107. Plant Physiology (4) II
Two lectures and six hours of laboratory.
Prerequisites: Biology 5 or consent of instructor, and Chemistry 2A-2B.
The activities of plans, including food manufacture, absorption, conduction, transpiration, respiration, growth and movement.

112. Cultivated Trees and Shrubs (3) I
One lecture and six hours of laboratory and field work.
Prerequisite: Biology 5. Botany 114 is recommended.
Identification of the common cultivated trees and shrubs of the San Diego region. Trips to local parks and private gardens.

114. Systematic Botany (4) II
Two lectures and six hours of laboratory.
Prerequisite: Biology 5. Biology 102 is recommended.
Kinds, relationships, systematic arrangement, and geographical distribution of vascular plants; collection and identification.

119-S. Field Botany (4) Summer
Two units of lecture and two units of laboratory.
Prerequisite: A course in college biological science or consent of instructor.
Local native vegetation with emphasis on ecological units within floristic areas. Primarily for students not majoring in the Life Sciences Division.

126. Plant Pathology (4) II
Two lectures and six hours of laboratory.
Prerequisites: Biology 5 and Botany 50 and 51.
A practical course dealing with the principles of disease in plants, control measures, and quarantine procedures. Emphasis is placed on the determination and control measures of those pathogenic organisms which affect crops, trees and shrubs and nursery stock.

162. Agricultural Botany (2) II
Field trips to be arranged.
Prerequisite: Biology 5.
A study of California crop plants, their general identification, cultural methods, and regional distribution.

166. Honors Course (Credit to be arranged) **I, II**
Refer to the Honors Program.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisites: 15 units in botany with grades of A or B and consent of instructor.

GRADUATE COURSES

290. Bibliography (1) (Offered as Biology 290)

298. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of staff; to be arranged with department chairman and instructor.

299. Thesis or Project (3) I, II
Prerequisites: An officially appointed thesis committee and advancement to candidacy.
Guidance in the preparation of a project or thesis for the master's degree.

BUSINESS ADMINISTRATION

IN THE DIVISION OF BUSINESS ADMINISTRATION

MAJORS IN BUSINESS ADMINISTRATION

Majors in various areas of business administration are offered with the B.S. degree in *arts and sciences*. A teaching major in business education is offered with the A.B. degree in *teacher education*. Courses in the major are in addition to 45 units in general education courses. Students with business administration majors are not required to complete a minor for the bachelor's degree. Requirements for each major are described below under the department offering the major. The five departments in the Division of Business Administration offer majors as follows:

Accounting Department. A major in accounting.

Business Law, Real Estate, and Insurance Department. Majors in insurance and in real estate.

Management Department. Majors in banking and finance, business management, industrial management, and personnel management.

Marketing Department. A major in marketing.

Business Education Department. Majors in business education, office management, and secretarial management with the B.S. degree; a major in business education with the A.B. degree and special secondary credential; and a major in business education leading to the general secondary credential in the postgraduate year.

MINORS IN BUSINESS ADMINISTRATION

The following minors are offered in *arts and sciences*: accounting, banking and finance, business education, business management, credit management, industrial management, insurance, marketing, and secretarial management. A teaching minor in business education is offered in *teacher education* for the general secondary credential. Requirements for each minor are described under the department offering the minor.

CERTIFICATE IN INDUSTRIAL MANAGEMENT

Admission to candidacy for the Certificate in Industrial Management is open to all industrial employees without reference to previous academic experience, provided that the student meets the regular admission requirements of the college. Candidacy for admission to the certificate program will be established by approval of the Coordinator of Industrial Management after the applicant has satisfactorily completed six units of applicable courses. At the time of application the student must have a 2.5 grade average (C+) on all courses taken to date. To receive the certificate the candidate must complete a total of 30 units of approved courses with a 2.5 grade average or better. No grade below "C" shall be counted toward the certificate.

Courses required of all candidates are as follows: Bus. Adm. 80, 104, 134, 135, 136, 139, E-142, 144. Approved electives are as follows: Bus. Adm. 116, 131, 137, 138, 140, 141, 143, 145, 146, 147, 155, 161, 173; Economics 140, 150, 151, 152.

BUREAU OF BUSINESS AND ECONOMIC RESEARCH

The Bureau of Business and Economic Research is an organized research activity serving the needs of the Division of Business Administration and the Department of Economics. Operationally, it is a part of the Division of Business Administration, with a director and a policy committee. Fiscal matters are co-ordinated through the San Diego State College Foundation. The principal objectives of the bureau are to (1) conduct research in the areas of economics and business, with special reference to local and regional problems; (2) facilitate research in these areas by the faculty and students; (3) seek co-operative arrangements with outside individuals and organizations for conducting specific research projects; (4) compile local and regional data; (5) publish the results of bureau research investigations and aid the faculty in publication of their research.

THE MASTER'S DEGREE

The master of arts degree for teaching service with a concentration in business education and the master of science degree in business administration with concentrations in six areas are offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

DEPARTMENT OF ACCOUNTING

Professors: Brown, E. P.; Lamden; Odmark (Chairman); Wright
Assistant Professors: Brodshatzer; Dodds; Fellers; Ferrel; Williamson
Lecturers: Harmeyer; Kronemyer; Snudden

Accounting Major

Accounting. Lower division: Business Administration 1A-1B, 2, 30A-30B, 80, Economics 1A-1B. Upper division: A minimum of 36 upper division units to include Business Administration 100, 101, 102, 106, 131 (or Economics 135), 134, 150, Economics 140; and 12 units selected from Business Administration 103, 107, 108, 112, 113, 114, 115, 116, 119, 130A, 131, Economics 135, 170. In addition to 45 units of general education, three upper division elective units outside of business administration or economics are required.

Accounting Minor

Accounting. A minor in accounting is offered to students who are not business administration majors. The minor consists of 15 to 22 units in accounting, of which Bus. Adm. 1A-1B and 100 must be included. A total of nine units must be in courses carrying upper division credit.

DEPARTMENT OF BUSINESS LAW, REAL ESTATE, AND INSURANCE

Associate Professor: Castetter (Chairman)
Assistant Professors: Champan; Hippaka; Reznikoff
Lecturers: Elledge; Miller

Insurance Major

Insurance. Lower division: Business Administration 1A-1B, 2, 30A-30B, 80, and Economics 1A-1B. Upper division: A minimum of 36 upper division units to include Business Administration 120, 121, 124, 125, 131 (or Economics 135), 134, 150, Economics 140; and 12 units selected from the following: Business Administration 106, 107, 130A, 130B, 131, 133, 144, 170, 171, 173, 174, 175; Economics 111, 131, 135, 138, 142, 170, 171, and 185. In addition to 45 units of general education, three upper division elective units outside of business administration or economics are required.

Real Estate Major

Real Estate. The major in real estate is offered primarily for the student desiring to acquire a core of essential knowledge of the principles of real estate and urban land economics which will prepare him to engage in professional real estate activities or general business. The student in the Division of Business Administration seeking a career in real estate development, land management, real estate finance, insurance, and related fields will have the opportunity to select courses in economics, political science, sociology, and other areas so as to develop a broad educational background in this field of study.

Lower Division. Business Administration 1A-1B, 2, 30A-30B, 80, and Economics 1A-1B. Business Administration 50 is a recommended elective in the lower division.

Upper Division. A minimum of 36 upper division units to include Business Administration 131 (or Economics 135), 134, 144, 150, 170, 171, 173, 174; Economics 138, 140; and six units selected from the following: Business Administration 100, 106, 107, 121, 153, 172, 175, Economics 127, 142, 187, and Political Science 160 (this latter course being recommended as part of the six units for most majors). In addition to 45 units of general education, three upper division elective units outside of business administration or economics are required.

Insurance Minor

A minor in insurance is offered to students who are not business administration majors. Students desiring this minor will include Business Administration 1A-1B, 30A-30B, and nine upper division units which must include Business Adminstration 120 and either Business Administration 121 or 124.

DEPARTMENT OF MANAGEMENT

Professors: Belcher (Chairman); Cameron; Torbert
Associate Professor: Hodge
Assistant Professors: Galbraith; Peters; Pierson; Robinson; Srbich
Lecturers: Farson; Gross; Lovell; McGuire; Mitton; Terrel

Management Majors

Banking and Finance. Lower division: Business Administration, 1A-1B, 2, 30A-30B, 80, and Economics 1A-1B. Upper division: A minimum of 36 upper division units to include Business Administration 100, 131, 133, 134, 150, Economics 135, 140; and 15 units selected from the following: Business Administration 120, 121, 128, 129, 141, 143, 144, 145, 170, 171, 172, 173, 174, 175; Economics 102, 111, 131, 138, 142, 170, 171, 172, 190. In addition to 45 units of general education, three upper division elective units outside of business administration or economics are required. Students interested in all aspects of finance, banking, and credit management will find this major suitable for their needs.

Business Management. Lower division: Business Administration 1A-1B, 2, 30A-30B, 80, and Economics 1A-1B. Upper division: A minimum of 36 upper division units to include Business Administration 100, 131 (or Economics 135), 134, 140, 144, 150, Economics 140; and 15 units selected from the following: Business Administration 120, 121, 124, 128, 130A, 130B, 131, 133, 135, 138, 141, 143, 145, 146, 153, 155, 161, 170, 171, 172, 173, 174, 175; Economics 100A, 100B, 111, 131, 135, 138, 142, 150, 151, and 170. In addition to 45 units of general education, three upper division elective units outside of business administration or economics are required.

Industrial Management. Lower division: Business Administration 1A-1B, 30A-30B, 80, Engineering 1, 23, Economics 1A-1B, and Mathematics 22. Upper division: a minimum of 36 upper division units to include Business Administration 102, 131 (or Economics 135), 134, 135, 140, 144, 150, Economics 140; six units selected from the following: Business Administration 136, 137, 138, 139; and six units selected from the following: Business Administration 100, 115, 120, 131, 141, 143, 145, 146, 147, 155, 161; Economics 111, 135, 142, 150, 151, 152, 170, and Psychology 124. In addition to 45 units of general education, three upper division elective units outside of business administration or economics are required.

Personnel Management. Lower division: Business Administration 1A-1B, 2, 30A-30B, 80, and Economics 1A-1B. Upper division: A minimum of 36 upper division units to include Business Administration 131 or Economics 133; Business Administration 134, 144, 150; Economics 140 or Psychology 104A; and 21 units selected with approval of the adviser from Business Administration 145, 146, 147, 148, 149; Economics 150, 151, 152; Psychology 105, 121, and 133.

Management Minors

Banking and Finance. A minor in banking and finance is offered to students who are not business administration majors. The minor consists of 15 to 22 units and must include Business Administration 1A-1B, Economics 1A-1B, Business Administration 134, and Economics 135.

Business Management. A minor in business management is offered to students who are not business administration majors. The minor consists of 15 to 22 units and must include Business Administration 1A-1B, Economics 1A-1B, Business Administration 134 and six additional units of upper division courses approved by the adviser in this field.

Credit Management. A minor in credit management is offered to students who are not business administration majors. To minor in credit management the student must complete 15 to 22 units including Business Administration 1A-1B, 30A-30B, 128, 129, and three additional units of upper division courses approved by an adviser in this field.

Industrial Management. A minor in industrial management is offered to students who are not business administration majors. To minor in industrial management, a student is required to complete the following 21 units: Economics 1A-1B, Engineering 23, and 12 units of upper division units in economics and business administration courses as approved by the chairman of the Management Department.

DEPARTMENT OF MARKETING

Assistant Professors: Barber; Hale; Lawson, D. F.; Sharkey (Chairman)
Lecturers: deJulien; Merrill, E. A.; Vaile

Marketing Major

Marketing. *Lower Division:* Business Administration 1A-1B, 30A-30B, 50, 80, and Economics 1A-1B. Upper division: A minimum of 36 upper division units to include Business Administration 134, 144, 150, 151, 131 (or Economics 133), Economics 140; 12 units to be selected from the following: Business Administration 102, 128, 152, 153, 154, 157, 161, 162, 163; and six units to be selected from business administration and/or economics courses with the approval of the marketing adviser. In addition to 45 units of general education, three upper division elective units outside of business administration or economics are required.

Marketing Minor

Marketing. A minor in marketing is offered to students who are not business administration majors. This minor consists of 17-22 units to include Business Administration 50 and Economics 1A-1B in the lower division and nine units of courses carrying upper division credit, including Business Administration 150 and six units to be selected with the approval of the adviser in marketing.

DEPARTMENT OF BUSINESS EDUCATION

Professor: Gibson
Associate Professors: Crawford, M. L. (Chairman); LeBarron; Straub
Assistant Professors: Archer; Barrons; Pemberton
Lecturers: Stubbs; Woodward

Majors are offered in business education, office management, and secretarial management with the B.S. degree in arts and sciences. A major in business education is also offered with the A.B. degree and special secondary credential in teacher education. A minor is not required for the bachelor's degree; however, students who plan to take the general secondary credential are advised to include a teaching minor for the credential in the undergraduate program.

MAJORS IN ARTS AND SCIENCES

Business Education

Business Education. This major is primarily for the student planning to take the general secondary credential with business education as the teaching major subject.

Lower Division. Business Administration 1A-1B, 30A-30B, 72 or equivalent, 73, 80, Economics 1A-1B; and the lower division courses in two of the subfields listed below, of which *accounting* or *secretarial* must be one.

Upper Division. A minimum of 36 upper division units to include the following: Bus. Adm. 131 or Economics 135. Bus. Adm. 134, 150, 158, 185, 186, 188, 189, Economics 140; and the upper division courses in the same two subfields which were selected in the lower division:

Accounting Subfield. Business Administration 2 and six units selected from Business Administration 100, 102, or 106.

Secretarial Subfield. Business Administration 75B or equivalent, and Business Administration 183A-183B.

Business Management Subfield. Business Administration 2 and six upper division units selected in consultation with the adviser in business education.

Merchandising Subfield. Business Administration 50, 160, and 181. (Students who plan to meet the requirement of the State Department of Education for a special secondary limited credential in vocational business education must have, in addition to the above requirements, one year of practical experience in a distributive occupation and four semester units to be selected from Bus. Adm. 152, 153, and 159.)

Office Management

Office Management. Lower division: Business Administration 1A-1B, 30A-30B, 71 (or equivalent), 73, 80, and Economics 1A-1B. Upper division: A minimum of 36 upper division units to include Bus. Adm. 131 or Economics 135, Bus. Adm. 134, 150, 184, 185, 186, 188, Economics 140; and 15 units to be selected from the following: Bus. Adm. 100, 102, 128, 144, 146, 196, Economics 170, Psychology 121.

Secretarial Management

Secretarial Management. Lower division: Business Administration 1A-1B, 30A-30B, 72 (or equivalent), 73, 75A-75B (or equivalent), 80, and Economics 1A-1B. Upper division: A minimum of 36 upper division units to include Bus. Adm. 131 or Economics 135, Bus. Adm. 134, 150, 184, 185, 186, 188, 183A-183B, Economics 140; and nine units to be selected from the following: Bus. Adm. 106, 120, 133, 144, 153, 196.

MINORS IN ARTS AND SCIENCES

Business Education. A minor in business education is offered to students who are not business administration majors. This minor consists of 15 to 22 units to include Business Administration 1A-1B, 71 and 72, or equivalents, and nine units of courses carrying upper division credit to be selected with approval of the adviser in business education.

Secretarial Management. A minor in secretarial management is offered to students who are not business administration majors. This minor consists of 15-22 units. The student must demonstrate competency equal to that required in Business Administration 72 before he can be admitted to the minor program. The minor must include Business Administration 75A-75B, or their equivalent, in the lower division, and 12 units in the upper division to include Business Administration 183A-183B, 185, 186, and 188.

MAJORS IN TEACHER EDUCATION

Special Secondary Credential

Special Secondary Credential in Business Education. Students taking this credential must complete a teaching major in business education, the additional requirements in professional education courses, and present evidence of experience in the field named in the credential.

The Major

Requirements in the Major. Lower division: Business Administration 1A-1B, 30A-30B, 72 or equivalent, 73, and 80. Economics 1A-1B must be included in general education to meet prerequisite and credential requirements. Upper division: 24 upper division units to include the following: Business Administration 131 or Economics 135, Business Administration 134, 150, 158, 185, 186, 188, 189, and Economics 140.

To complete the credential requirements in the teaching subfields, additional units are required in at least *two* of the following fields of concentration, one of which must be *accounting* or *secretarial:*

Accounting. Business Administration 2 and six units from Business Administration 100, 102, or 106.

Secretarial. Business Administration 75B or equivalent, and Business Administration 183A-183B.

Business Management. Business Administration 2.

Merchandising. Business Administration 50, 160, and 181. (Students who plan to meet the requirement of the State Department of Education for a special secondary limited credential in vocational business education must have, in addition to the above requirements, one year of practical experience in a distributive occupation and four semester units to be selected from Business Administration 152, 153, and 159.)

Professional Education

Professional Courses in Teacher Education. 24 upper division units to include Education 100, 110, 120, 180, 121U; one of the following: Education 121Q, 121R, or 121S; and Health Education 151.

Work Experience

Work Experience. Satisfactory evidence to be presented of one-half year, or 1,000 hours, of approved experience in the field named in the credential.

General Secondary Credential

Major for the General Secondary Credential. A teaching major is offered in business education for the general secondary credential. Students may complete requirements for this major and the general secondary credential in one of the following ways:

(1) By taking the special secondary credential in business education with the A.B. degree; completing requirements in a teaching minor for the general secondary credential; and completing other credential requirements in a postgraduate year, to include five graduate units to be selected from Business Administration 270 and 271.

(2) By completing the business education major in arts and sciences with the B.S. degree, a teaching minor for the general secondary credential, presenting

evidence of appropriate work experience (see special secondary credential above), and completing other credential requirements in a post graduate year, to include five graduate units to be selected from Business Administration 270 and 271.

Refer to the section of the catalog on Professional Curricula in Teacher Education for a description of requirements in the postgraduate year.

MINOR IN TEACHER EDUCATION

Minor for the General Secondary Credential. A teaching minor in business education is offered in teacher education for the general secondary credential. This minor, which may be used for the A.B. degree, consists of a minimum of 21 units, exclusive of course equivalents, and must include Business Administration 71, 72, 1A-1B; and nine upper division units in business administration courses selected with approval of the adviser in business education.

COURSES IN BUSINESS ADMINISTRATION

LOWER DIVISION COURSES

1A-1B. Principles of Accounting (3-3) Year Course Beginning Either Semester

Four hours of lecture and laboratory.

Prerequisite: Business Administration 1A is a prerequisite for 1B.

Introduction to the theory, practice, and principles of accounting as they relate to single proprietorship, partnership, and corporate types of business enterprises.

2. Mathematics of Finance (3) I, II

Prerequisites: Two years of algebra in high school or equivalent.

Interest and annuities; amortization; sinking funds; valuation of bonds; depreciation; mathematics of building and loan associations.

30A-30B. Business Law (3-3) Year Course Beginning Either Semester

Prerequisite: Business Administration 30A is a prerequisite for 30B.

Principles of business law and their application to actual cases involving business transactions. Subjects included in 30A are contracts, sales and agency. Business Administration 30B includes partnerships, corporations, negotiable instruments, property and creditor's rights.

50. Salesmanship (2) I, II

Theoretical and psychological backgrounds of salesmanship; newer concepts of selling; the selling of ideas and services; steps in a sale: Attention, interest, desire, closing; the development of clienteles and of good will; the personal factor in salesmanship.

71. Beginning and Personal-use Typewriting (3) I, II

Five hours of lecture and activity.

Fundamentals of typewriting. Development of personal-use skills. Not open to students with credit for high school typewriting.

72. Typewriting (3) I, II

Five hours of lecture and activity.

Advanced typewriting. Production work and problem typing.

73. Office Machines (1 to 3) I, II

The operation of calculators and adding-listing machines and their application to business problems.

75A-75B. Shorthand (3-3) Year Course Beginning Either Semester

Five hours of lecture and activity.

Prerequisite: Business Administration 75A is a prerequisite for 75B.

Gregg shorthand theory; dictation and transcription.

76. Advanced Shorthand (3) I, II

Prerequisites: Business Administration 75A-75B.

Development of speed in writing and transcription.

80. Business Writing (3) I, II

Prerequisites: English 1 and Business Administration 71.

Written communications in typical business situations.

UPPER DIVISION COURSES

100. Intermediate Accounting (3) I, II
Prerequisites: Business Administration 1A-1B.
Theories and principles underlying balance sheets of partnerships and corporations.

101. Advanced Accounting (3) I, II
Prerequisite: Business Administration 100.
Problems involved in ventures, consignments, installment sales, estate accounting, consolidations, insurance and foreign exchange.

102. Cost Accounting (3) I, II
Prerequisites: Business Administration 1A-1B.
Basic theories and practices of materials costing, labor costing, and overhead absorption as applied to process and job order cost systems.

103. Advanced Cost Accounting (3) I, II
Prerequisite: Business Administration 102.
Theories and practices of job order and process cost systems including standard costs and costs for special managerial decisions.

104. Managerial Cost Accounting (3) I, II
Prerequisite: Business Administration 134.
Use of accounting information to solve management problems related to control and planning of manufacturing. Included are basic accounting principles and techniques, cost standards, variance analysis, breakeven charts, budgeting, and cost-volume decisions. Designed primarily for Certificate in Industrial Management.

106. Income Tax Accounting (3) I, II
Prerequisites: Business Administration 1A-1B.
Theory and procedures in the preparation of federal and California income tax returns for individuals.

107. Advanced Income Tax Accounting (3) I, II
Prerequisite: Business Administration 106.
Theory and procedures in the preparation of federal and California income tax returns for partnerships, corporations, and fiduciaries; brief survey of social security and estate and gift taxes.

108. Governmental Accounting (3) I
Prerequisites: Business Administration 100 and 101, or consent of instructor.
A comparative study of accounting systems used by municipalities, counties, and the State of California; detailed comparisons with commercial practice; procedures in handling budget accounts, appropriations, and encumbrances; subsidiary records; cost records; internal checks; auditing.

112. Auditing (3) I
Prerequisites: Business Administration 100 and 101.
General principles of auditing; duties, ethics, and responsibilities of the auditor; procedures for verification of financial records used by public accountants and internal auditors; auditor's opinion and report.

113. Advanced Auditing (3) II
Prerequisite: Business Administration 112.
Application of auditing principles in verification of financial statements; types, limitations, contents and review of working papers; preparation of reports; current status and trends in the development of auditing standards and procedures.

114. Accounting Systems (3) II
Prerequisites: Business Administration 100 and 102.
General principles underlying the design and installation of accounting systems; methods and procedures used in various types of businesses; familiarization with various types of accounting machines presently available.

115. Financial Statements (3) II
Prerequisite: Business Administration 100.
The construction, composition, analysis and interpretation of accounting reports with particular emphasis on the form, content and phraseology of reports.

116. Internal Auditing and Controllership (3) II
Prerequisite: Business Administration 112.
The place and functions of the controller and internal auditor in business enterprises; accounting systems and methods related to functions of internal check and audit control of routine transactions.

119. C. P. A. Review (3) II
Prerequisites: Business Administration 100, 101, 102, 103, 106, 107, 108, 112, 113.
An intensive review of the accounting principles and procedures covered in the accounting theory and accounting practice sections of the uniform C. P. A. examination prepared by the American Institute of Certified Public Accountants.

120. General Insurance (3) I, II
History of insurance; economic and social implications; principles of insurance contracts; theory of risk; law of large numbers. Survey of all major insurance fields and policies including life, fire, marine, inland marine, casualty and surety bonding.

121. Property and Casualty Insurance (3) I, II
Prerequisites: Business Administration 30A, 30B, 120.
All standard forms of insurance except life; includes automobile, liability, workmen's compensation and disability, fire, marine, and inland marine. Legal interpretation of contract coverages; underwriting problems, marketing of insurance, government supervision and control.

E-123A—E-123B. C. P. C. U. Preparation (3-3) Extension
Preparation for Chartered Property and Casualty Underwriter examination. Content to be selected by instructor from: Parts I and II—Insurance Principles and Practices; Part III—General Education; Part IV—Law; Part V—Accounting, Finance and Agency Management.

124. Life Insurance Principles and Practices (3) I, II
Economic and social aspects of life insurance; nature of life insurance and annuity contracts; basic legal principles; theory of probabilities, premiums, reserves, and nonforfeiture values; company operational activities; agency development and management.

125. Life Insurance Underwriting (3) II
Programing fundamentals with emphasis upon economic, actuarial, and legal principles, program co-ordination and integration with wills; guardianships; estate planning fundamentals; taxation; business life insurance. Analysis of life insurance selling as a career.

E-126A—E-126B. C. L. U. Preparation (3-3) Extension
Preparation for Chartered Life Underwriter examination. Content to be selected by instructor from: Part A—Life Insurance Fundamentals; Part B—General Education; Part C—Law, Trusts, and Taxes; Part D—Finance; Part E—Life Underwriting.

128. Credits and Collections (3) I, II
Prerequisites: Business Administration 1A-1B and 30A-30B.
The credit man and his work, including the instruments with which he works, sources of credit information, the technique of his department, collection methods, legislation for the protection of debtor and creditor, and credit insurance.

129. Credit Management (3) II
Prerequisites: Business Administration 128 and senior standing.
Problems involved in credit and financial management, including methods of developing credit policies, organizing a credit department or institution, supervising and co-ordinating the work of subordinates in the credit field.

130A-130B. Advanced Business Law (3-3) I, II
Prerequisites: Business Administration 30A-30B.
Principles and rules of law. First semester includes contractual relationships, obligations, and trade regulation. Second semester includes formation and operation of business entities. Either semester may be taken first.

131. Corporation Finance (3) I, II
(Same course as Economics 133)
Prerequisites: Economics 1A-1B.
The corporate form of organization, instruments of long-term finance, methods of raising capital, efficient financial management, the financing of organizations, and governmental control. Not open to students with credit in Economics 133.

133. Investments (3) I, II
Investment principles and practices with emphasis upon problems of the small investor, such as tests of a good investment, sources of information, types of stocks and bonds, mechanics of purchase and sale, investment trusts, real estate mortgages, and the like.

134. Business and Industrial Management (3) I, II
Prerequisites: Economics 1A-1B.
Principles and practices of business management as applied to industrial organization and operation; emphasis upon efficient utilization and control of resources.

135. Production Planning and Control (3) I, II
(Same course as Engineering 173)
Prerequisite: Business Administration 134.
Forecasting and estimating; authorization to manufacture; order, flow, block and load control; continuous versus intermittent production; use of drawings; tabulation of data; co-ordination of production with other factory departments. Not open to students with credit in Engineering 173.

136. Motion and Time Study (3) I, II
(Same course as Engineering 176)
Prerequisite: Business Administration 134.
Work simplification through methods improvement; operations analysis; flow charts; calculation of time standards, work and speed analysis; new developments in job timing and motion economy study; time reduction curves; work standards. Not open to students with credit in Engineering 176.

137. Plant Layout and Materials Handling (3) I, II
Prerequisite: Business Administration 135.
Principles of effective plant layout and materials handling methods; emphasis on process analysis, operation sequence analysis, location and layout of production service, storage, packing, and loading facilities.

138. Industrial Purchasing (3) I, II
Prerequisite: Business Administration 134.
Policies for purchasing raw materials, fabricated parts, supplies, machinery and industrial equipment; procedures and records control; quantity and price considerations; bid analysis and award procedures; follow-up; vendor relations; legal problems; quality control; receiving and inspection; inventory control.

139. Quality Control (3) I
(Same course as Engineering 177 and Mathematics 177)
Prerequisite: Business Administration 134 and either Economics 140 or Mathematics 12.
Statistical techniques; tolerances and variants; standards; organization for inspection; inspection methods for raw materials, work in process, and finished products; control of inspection devices. Not open to students with credit in Engineering 177 or Mathematics 177.

140. Organization and Management Theory (3) I, II
Prerequisites: Business Administration 134 and 144 I, II and senior standing.
Administrative principles and their application to the objectives, organization, planning, policies, and controls of a business.

141. Electronic Data Processing (3) I, II
Prerequisites: Business Administration 134 and consent of instructor.
The role of high speed computing equipment in management decision making. Effect of improved data availability on management control. Analysis of procedures for effective data processing. Selection and use of equipment. Introduction to programing. Applications to accounting, production and marketing.

E-142. Manufacturing and Tooling Administration (3) Extension
(Same course as Engineering E-179)
Prerequisite: Business Administration 135 or consent of instructor.
Production breakdown and relationship to manufacturing plan and tooling policy; planning, processing, and control required to activate program into production. Relationship of design engineering, tool project engineering, and tool manufacturing to production. Not open to students with credit in Engineering E-179.

143. Systems and Procedure Analysis (3) I, II
Prerequisites: Business Administration 80, 100, and 134.
The application of scientific management principles to administrative systems; analysis of paperwork flow, and forms design; communication, feedback and control techniques; economic analysis of alternative types of equipment; preparation of written procedures.

144. Personnel Management (3) I, II
Prerequisite: Business Administration 134.
Problems and philosophies in the management of personnel relations. Selecting, training, supervising and rating employees. Methods used by management in job evaluation; wage and salary payment plans; employee services; health and safety; union relationships; stimulation of interest.

145. Human Relations in Management (3) I, II
(Same course as Political Science 145)
Prerequisite: Business Administration 144 or Political Science 144.
Human factors in supervision and management. Problems of incentives, attitudes, communication, and other personal relations between employee and employer. Effectiveness of various types of leadership. Discipline and grievances. Not open to students with credit in Political Science 145.

146. Wage and Salary Administration (3) I, II
(Same course as Political Science 146)
Prerequisite: Business Administration 144 or Political Science 144.
Job analysis; major techniques of job evaluation; problems of wage and salary administration, incentive pay methods; merit rating plans. Not open to students with credit in Political Science 146.

147. Supervisory Staff and Employee Training (3) I, II
(Same course as Political Science 155)
Prerequisite: Business Administration 144 or Political Science 144.
Training as a management function and as an aspect of communication; operating methods and structure of training departments; types of training; evaluation of training results. Teaching methods and use of teaching aids. Not open to students with credit in Political Science 155.

148. Problems in Personnel Management (3) II
Prerequisite: Business Administration 144.
An advanced course dealing with practices and issues in personnel administration. Evaluation of procedures and techniques in the major functions of personnel management. Review and appraisal is emphasized.

149. Personnel Management Laboratory (1) I, II
Three hours of laboratory.
Prerequisite: Credit or concurrent registration in Business Administration 144.
Investigation of personnel management practices and policies. Experience in interviewing, training, and conducting personnel research assignment, using field studies, role playing and similar techniques.

150. Marketing Principles (3) I, II
Prerequisites: Economics 1A-1B.
Study of marketing functions, activities of producers, wholesalers, retailers and other middlemen; channels of distribution; integration of marketing activities; price policies; government regulation.

151. Problems of Marketing Management (3) II
Prerequisite: Business Administration 150.
An advanced course dealing with practical aspects of marketing. Solutions of problems faced by producers, wholesalers, retailers and other middlemen in the marketing of their products.

152. Retailing Principles (3) I, II
Prerequisite: Business Administration 150.
Study of retail stores, emphasizing the problems of store managers and merchandising executives; store location, organization, personnel, sales promotion, buying and handling of merchandise, inventory, turnover, and control methods. Problems of profitable operation under changing conditions.

153. Advertising Principles (3) I, II
Prerequisite: Business Administration 150.
Advertising as a sales promotional tool in marketing activities; consumer, market and product analysis; advertising media; preparation of advertisements; measurement of advertising effectiveness; economic and legal aspects of advertising; public relations; advertising campaigns.

154. Advertising Problems (3) I, II
Prerequisites: Business Administration 150 and 153, or consent of instructor.
Practice in applying accepted principles to specific problems. A variety of cases, including large, medium and small businesses are covered. Principles and solutions are developed through class discussion. Emphasis is on co-ordination of advertising with other marketing activities.

155. Public Relations (3) I (Same course as Journalism 180)
Principles, methods, and objectives in the field of public relations; evaluation of the "publics" of institutions and industry; case studies of public relations problems. Not open to students with credit in Journalism 180.

156. Radio and Television Station Management and Advertising (3) I
(Same course as Speech Arts 181)
Prerequisites: Speech Arts 81A and 81B and consent of instructor.
Administrative and commercial methods of radio and television station operation. Advertising trends in broadcasting; audience and program measurement; publicity and promotion; traffic. Not open to students with credit in Speech Arts 181.

157. Market Research (3) II
Prerequisites: Business Administration 150 and Economics 140.
The solution of business problems by formal research techniques. The procedures of research are developed by considering actual business problems such as determining marketing potential, brand preferences, and sales forecasts.

***158. Consumer Income Management (3) I, II**
Functions and responsibilities of consumers; problems of choice-making; planning expenditures for housing, household operation, insurance and investments. Economics of installment buying, borrowing procedures, control of frauds, legislation affecting consumers. A general education course in family life education.

159. Color and Design in Merchandise (2) I, II
(Same course as Art 107)
Six hours. No prerequisite.
Principles of line, mass, and color applied to the design of manufactured goods, especially consumer goods, and to merchandise display. Shape and color in relation to utility and sale value. Practical problems. Not open to students with credit in Art 7 or 107.

160. Merchandise Analysis (3) I (Same course as Home Economics 160)
Characteristics, merits, limitations, care, and selling points of the more important textile and nontextile products. Stress on manufacturing processes as they affect consumer demands. Not open to home economics majors. Not open to students with credit in Home Economics 160.

161. Traffic Management (3) II
Organization and functions of a traffic department, routing policy on shipments, freight rates and classifications, receiving and shipping, loss and damage claims, warehousing, packing and loading, documentation, export and import shipments, government regulations.

162. Industrial Marketing (3) I, II
Prerequisites: Business Administration 134 and 150, or consent of instructor.
Description and importance of the industrial market channels of distribution, advertising policies, merchandising techniques, methods of selling, promotional methods, pricing techniques, applications of marketing research in industrial marketing. Planning the overall marketing programs.

163. Sales Management (3) I, II
Prerequisites: Business Administration 50 and 150.
Consideration of the structure of sales organizations; sales policies; selection, training, compensation, evaluation and control of the sales force; sales analysis; sales quotas; sales costs and budgets; markets and product research and analysis; co-ordination of personal selling with other forms of sales effort.

166. Honors Course I, II (Credit to be arranged)
Refer to the Honors Program.

170. Real Estate Principles and Practices (3) II
(Same course as Economics 139)
Prerequisites: Economics 1A-1B.
Functions and regulation of the real estate market; transfers of property, including escrows, mortgages, deeds, title insurance; appraisal techniques; financing methods; leases; subdivision development; property management. Not open to students with credit in Economics 139.

171. Law of Real Property (3) II
Prerequisites: Business Administration 30A-30B and 170 or Economics 139, or consent of instructor.
Legal theory and practice of estates in land; landlord and tenant relationships; land transactions; mortgages and trust deeds; easements; land use; ownership rights in land; public land law.

172. Property Management (3) I
Prerequisite: Business Administration 170 or Economics 139, or consent of instructor.
Study of the rental markets, property management programs, collection procedures, lease forms, tenant and owner relations, rental techniques, maintenance and rehabilitation procedures, and accounts and records.

173. Real Estate Finance. (3) I, II
Prerequisites: Economics 1A-1B, Business Administration 30A-30B, 170 or Economics 139, or consent of instructor.
Methods of financing real estate; sources of real estate credit; loan servicing; governmental financial agencies; acquisition and sale of mortgages and trust deeds.

174. Real Estate Appraisal Theory (3) I
Prerequisites: Business Administration 170 or Economics 139, and Economics 138, or consent of instructor.
Introduction to theories, functions, and purposes of appraisals of residential and income properties: Methods of valuation; techniques of market data analysis, rehabilitation estimates.

175. Appraisal of Real Estate (3) II
Prerequisite: Business Administration 174.
Methods and procedures of appraising real property; student appraisals of family dwellings, commercial and apartment properties; writing of standard appraisal reports.

180. Workshop in Business Education (2) Summer
Developments in business education areas such as (A) bookkeeping, (B) distributive and basic business education, (C) secretarial, and (D) typewriting. Opportunity provided for work on individual problems. May be repeated with new subject matter to a total of eight units.

181. Administration and Supervision of Distributive Education (3) II
Objectives, duties, qualifications, and problems of supervisors and co-ordinators in organizing and administering distributive education programs.

183A-183B. Executive Secretarial Procedures (3-3) Year Course
Beginning Semester I
Analysis of and practice in the executive secretarial procedures in modern offices; includes review for the *Certified Professional Secretary* examination. Prerequisites: Business Administration 72 and 75B or their equivalents.

184. Office Management (3) I, II
Functions, facilities, techniques, organization and personnel relationship of the business office. (Formerly Business Administration 173.)

185. Office Systems and Automation (3) I, II
Principles and techniques used in formulating, installing, and operating modern office systems; the functions of business machines, including integrated and electronic data processing equipment, in these systems; applications to modern office situations.

186. Office Machines Methods (2) I, II
Methods and theories of voice-writing, addressing, and duplicating machine operation as applied to office procedures. (Formerly Business Administration 176.)

188. Records Management (1) I, II
Systems of preparing, keeping, storing and disposing of office records, including the use of equipment and supplies. (Formerly Business Administration 178.)

189. Objectives and Curricula in Business Education (3) I
Scope, function, and curricula of business education in the secondary schools.

196. Work Experience (2) I, II
Supervised work in co-operating business firms; relationship between theory and practice in specific business conditions. Prerequisite: Permission of instructor.

198. Investigation and Report (1-3) I, II
Prerequisites: Senior standing and consent of instructor.

May be repeated to a maximum of six units.

A comprehensive and an original study of a problem connected with business under the direction of one or more members of the business administration staff.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.

Prerequisite: Consent of instructor.

GRADUATE COURSES

200. Seminar in Accounting Theory (3) II
Current trends in accounting in relation to historical development of accounting principles and theory.

220. Seminar in Industrial Organization and Management (3) I, II
Prerequisites: Business Administration 134 and consent of instructor.

Analysis of selected topics in industrial organization and management directed to the development of a theory of organization and to an understanding of the operation of industrial enterprises. Emphasis on planning, co-ordination, leadership, and decision-making.

221. Seminar in Personnel Management (3) I, II
Prerequisites: Business Administration 144, Economics 150, and consent of instructor.

Contemporary problems in personnel and industrial relations. Investigations by seminar members of aspects of human factors in management, labor relations and other personnel-related topics. Case problems involving such areas as communication, participation, status, control, and effects of technological change.

222. Seminar in Finance (3) I, II
Prerequisites: Business Administration 131 and/or Economics 135, and consent of instructor.

Principles and problems involved in financing business firms from both internal and external sources. Stressing of student research and knowledge of literature in the field of finance.

223. Seminar in Insurance (3) I, II
Prerequisites: Business Administration 120, 124, 125, and consent of instructor.
Advanced study of insurance management including underwriting, investment, and other problems related to effective business operation. Programming of personal, partnership and corporation estates.

250. Seminar in Marketing (3) II
Prerequisites: Business Administration 150 and consent of instructor.
Selected phases of marketing, such as pricing policies and practices, channels of distribution, sales promotion activities, distribution cost analysis. Written reports on special aspects of the semester's subject matter are required.

270. Seminar in Business Education (3) I, II
An intensive study of some phase of business education, such as administration and supervision; distributive and basic business education; trends in and methods of teaching shorthand and typewriting. May be repeated with new subject matter. Maximum of six units may be applied for the master's degree program.

271. Seminar in Office Management (2)
Prerequisites: Business Administration 1A, 1B, 184.
An intensive study of the problems of office management and their solution. The relation of records, reports, budgets and manuals to managerial control.

290. Bibliography (1)
Exercises in the use of basic reference books, journals, and specialized bibliographies, preparatory to the writing of a master's project or thesis.

296. Directed Field Experience (1-6)
Students lacking practical experience in the occupational area will be required to obtain such experience in the field, subject to approval by the faculty adviser. Required in addition to the 30 units for the master of science degree, when experience is lacking or not acceptable. Not open to students who have already qualified.

298. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of staff; to be arranged with department chairman and instructor.

299. Thesis (3)
Prerequisites: An officially appointed thesis committee and advancement to candidacy.
Guidance in the preparation of a project or thesis for the master's degree. Students have an option of a comprehensive examination or a thesis or project, with approval of the graduate office.

CHEMISTRY

IN THE DIVISION OF PHYSICAL SCIENCES

Professors: Isensee (Chairman); Joseph; Nichols; Robinson; Rowe; Spangler, J. A.; Walba.
Associate Professor: Wick.
Assistant Professors: Harrington, N. J.; Hellberg; Jensen; Landis; Malik; Sheppard, J. C.; Stewart, C. J.; Wadsworth.

CHEMISTRY MAJORS

Arts and Sciences. A major in chemistry is offered with the A.B. or B.S. degree in arts and sciences. Courses in the major are in addition to 45 units in general education courses, except that nine units in chemistry, physics, and mathematics may be counted in general education. A minor is required of chemistry majors for the A.B. degree but not for the B.S. degree. Foreign language (German) is a requirement for the A.B. degree, Plan A, and for the programs leading to the certificate of the American Chemical Society. Curricular outlines for the various chemistry majors are given below.

Teacher Education. A teaching major in physical science and general science, with chemistry as the basic major, is offered for the general secondary credential.

The major for this credential is described below. Students who plan to take the general secondary credential are advised to include a teaching minor for the credential in the undergraduate program.

CHEMISTRY MINOR

A minor in chemistry is offered in arts and sciences. The minor consists of 15 to 22 units in chemistry, six units of which must be in courses carrying upper division credit. Chemistry 1A-1B or its equivalent must be included in the minor.

THE MASTER'S DEGREE

The master of arts degree with a major in chemistry, the master of arts degree for teaching service with a concentration in chemistry, and the master of science degree in applied chemistry are offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

CURRICULA FOR CHEMISTRY MAJORS IN ARTS AND SCIENCES

Bachelor of Science Degree

Bachelor of Science Degree in Chemistry. The curriculum outlined below for the B.S. degree is based upon the recommendations of the Committee for Professional Training of Chemists of the American Chemical Society. It qualifies graduates for many types of positions as chemists and provides the training required by most universities for admission to graduate work in chemistry. This department is on the approved list of the American Chemical Society. The degree may be obtained without the certificate of the American Chemical Society by proper substitution of courses for the German requirement. A minor is not required of students taking the B.S. degree.

B.S. Degree and Certificate of the American Chemical Society

	Units	
First year	*1st Sem.*	*2nd Sem.*
Chemistry 1A-1B	5	5
Physics 4A	–	4
Mathematics 50, 51	5	4
*Health Education 21	2	–
*Biology 1 or 3	–	3
*English 1	3	–
*P. E. activity	½	½
	15½	16½

	Units	
Second year	*1st Sem.*	*2nd Sem.*
Chemistry 5A-5B	4	4
Physics 4B-4C	4	4
Math 52	4	–
†*German 1, 2	3	3
*Speech Arts 3	2	–
*Psychology 1	–	3
*Social Science	–	3
*P. E. activity	½	½
	17½	17½

	Units	
Third year	*1st Sem.*	*2nd Sem.*
Chemistry 101A-101B	4	4
Chemistry 102A-102B	1	1
Chemistry 110A-110B	3	3
†German 8A-8B	3	3
*Social Science	3	3
*Lit., Phil., and Arts	3	–
	17	14

	Units	
Fourth year	*1st Sem.*	*2nd Sem.*
Chemistry 111	–	3
‡Advanced Chemistry	9	8
*Lit., Phil., and Arts	3	–
Electives	3	4
	15	15

* General education courses (nine units of chemistry, physics, and mathematics may be applied toward general education requirements).

† The B.S. degree may be obtained without the Certificate of the American Chemical Society by substituting for the German courses, six units of general education courses and six units of electives.

‡ Must include four units lecture and one unit laboratory in chemistry courses requiring three full year-courses in chemistry as prerequisites. Remainder may include courses in related subjects by approval of department. May not include Chemistry 105.

Bachelor of Arts Degree

Students taking the Bachelor of Arts degree are required to complete a minor in another field. Two programs for the A.B. degree in chemistry are outlined below:

Plan A for the A.B. Degree in Chemistry. Plan A is offered for students who wish to take the A.B. degree and at the same time meet the recommendations of the American Chemical Society and the requirements of most universities for admission to graduate work in chemistry. The degree may be obtained without the certificate of the American Chemical Society by appropriate substitution of courses for German 8A-8B.

Plan B for the Degree in Chemistry. Plan B is designed for students who do not intend to become professional chemists, but who desire the major in chemistry as part of a general education or in preparation for training in a related profession. By appropriate choice of electives, graduates can meet the requirements for admission to medical schools. The sequence of courses listed under Plan B represents the minimum technical requirement for an A.B. degree with a major in chemistry.

Plan A: The A.B. Degree and Certificate of the American Chemical Society

	Units	
First year	*1st Sem.*	*2d Sem.*
Chemistry 1A-1B	5	5
Physics 4A	–	4
Math 50, 51	5	4
*Health Education 21	2	–
*Biology 1 or 3	–	3
*English 1	3	–
*P. E. activity	½	½
	15½	16½

	Units	
Second year	*1st Sem.*	*2d Sem.*
Chemistry 5A-5B	4	4
Physics 4B-4C	4	4
Mathematics 52	4	–
*German 1, 2	3	3
*Speech Arts 3	2	–
*Psychology 1	–	3
*Social Science	–	3
*P. E. activity	½	½
	17½	17½

	Units	
Third year	*1st Sem.*	*2d Sem.*
Chemistry 101A-101B	4	4
Chemistry 102A-102B	1	1
Chemistry 110A-110B	3	3
†German 8A-8B	3	3
*Social Science	3	3
*Lit., Phil., and Arts	3	–
	17	14

	Units	
Fourth year	*1st Sem.*	*2d Sem.*
Chemistry 111	–	3
‡Chemistry electives	2	3
Minor (U. D.)	3	3
*Lit., Phil., and Arts	3	–
Electives	5	4
	13	13

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* General education courses (nine units of chemistry, physics, and mathematics may be applied toward general education requirements).

† The A.B. degree may be obtained without the Certificate of the American Chemical Society by substituting for German 8A-8B six units of electives.

‡ Must include four units lecture and one unit laboratory from courses requiring three full year-courses in chemistry as prerequisites.

Plan B: The A.B. Degree for Related Professions

	Units	
First year	*1st Sem.*	*2d Sem.*
Chemistry 1A-1B	5	5
*Physics 2A-2B	3	3
*Physics 3A-3B	1	1
*Mathematics 21, 22	3	3
*English 1	3	–
*Psychology 1	–	3
*P. E. activity	½	½
	15½	15½

	Units	
Second year	*1st Sem.*	*2d Sem.*
Chemistry 5A-5B	4	4
†*French or German	3	3
*Speech Arts 3	2	–
*Health Education 21	–	2
*Biology 1 or 3	3	–
*Lit., Phil., and Arts	–	3
Elective	3	3
*P. E. activity	½	½
	15½	15½

Third year	*Units* 1st Sem.	*Units* 2d Sem.
Chemistry 101A-101B	4	4
Chemistry 102A-102B	1	1
Chemistry 110A-110B	3	3
*Social Science	3	3
*Lit., Phil., and Arts	3	–
*Elective	3	3
	17	14

Fourth year	*Units* 1st Sem.	*Units* 2d Sem.
Chemistry 111	–	3
‡Chemistry electives	3	2
*Social Science	3	–
Minor (U. D.)	3	3
Electives	7	7
	16	15

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* General education courses.
† Six units of general education courses may be substituted for the French or German.
‡ May not include Chemistry 105.

MAJOR IN TEACHER EDUCATION

General Secondary Credential

Major for the general secondary credential: A teaching major in physical science and general science is offered for the general secondary credential. Requirements for this teaching major may be met by completing the A.B. or B.S. degree in arts and sciences with a major in chemistry or physics, or the A.B. degree with a major in physical science, and in addition to the major, the following lower division courses: Astronomy 1, Biology 3 and 4, or Biology 5, and Geology 2 or 1A. (These courses may be counted in general education.)

Recommended lower division electives: Astronomy 9, Geography 3, Geology 3, Industrial Arts 5, 6, 85. Recommended upper division electives, if not included as part of the major: Botany 119-S, Chemistry 101A, Physics 101, 120, Zoology 119-S, and Geography 153.

Additional Credential Requirements

Requirements for the general secondary credential include completion of a bachelor's degree, the teaching major in physical science and general science, a teaching minor for the credential, and the credential requirements in a postgraduate year, to include four graduate units selected from Chemistry 200 (2-4 units) and Physics 200 (2-4 units).

Refer to the section of the catalog on Professional Curricula in Teacher Education for a description of requirements in the postgraduate year.

LOWER DIVISION COURSES

1A-1B. General Chemistry (5-5) Year Course Beginning Either Semester
Three lectures and six hours of laboratory.

Prerequisites: Elementary algebra and plane geometry. Recommended: High school chemistry, physics, and additional mathematics.

General principles of chemistry with emphasis on inorganic materials. Qualitative analysis is included in the second semester.

***2A-2B. Fundamentals of Chemistry (3-3) Year Course Beginning Semester I**
Two lectures and three hours of laboratory.

A general course including inorganic and organic chemistry for students not intending to take further work in chemistry other than Chemistry 3. A physical science course in general education meeeting the laboratory requirement in natural science. Not open to students with credit for Chemistry 1A-1B.

3. Chemistry of Nutrition (3) II
Three lectures with demonstrations.

Prerequisites: Chemistry 2A-2B. This course intended primarily for majors in home economics, nursing, and related fields.

Digestion, metabolism and nutrition of foodstuffs and the role of vitamins, hormones and electrolytes in life processes.

5A. Elementary Quantitative Analysis (4) I, II
Two lectures and six hours of laboratory.

Prerequisites: Chemistry 1A-1B and facility in the use of logarithms and slide rule.

Theoretical consideration of the principles of gravimetric and volumetric analysis. Practice in standardizing reagents and analyzing samples.

5B. Quantitative Analysis (4) I, II
Two lectures and six hours of laboratory.
Prerequisite: Chemistry 5A.
Further work in the theory and practice of volumetric and gravimetric analyses and the study of electro analytical methods.

22. Glass Blowing (1) II
Three hours of laboratory.
Prerequisites: Chemistry 1A-1B.
Elementary training in the manipulation of glass.

UPPER DIVISION COURSES

101A-101B. Organic Chemistry (4-4) Year Course Beginning Either Semester
Three lectures and three hours of laboratory.
Prerequisites: Chemistry 1A-1B.
The first semester lecture stresses aliphatic compounds and includes an introduction to aromatic compounds. The second semester stresses the aromatics, continues with more complex aliphatics and introduces mechanisms of organic reactions.

102A-102B. Organic Chemistry Laboratory (1-1) Year Course Beginning Either Semester
Three hours of laboratory.
Prerequisite: Open only to students enrolled concurrently in Chemistry 101A-101B.
Synthesis of typical aliphatic and aromatic compounds. Study of the theory and practice of laboratory operations.

105. Advanced Quantitative Analysis (4) I, II
Two lectures and six hours of laboratory.
Prerequisite: Chemistry 5A.
Advanced work in the theory and practice of volumetric, gravimetric, and electroanalysis. Not open to students with credit for Chemistry 5B.

110A-110B. Physical Chemistry (3-3) Year Course Beginning Semester I
Three lectures, problems and reports.
Prerequisites: Physics 2A-2B; Mathematics 52; and Chemistry 5A-5B.
Theoretical principles of chemistry with emphasis on mathematical relations.

111. Physical Chemistry Laboratory (3) II
One discussion period and nine hours of laboratory.
Prerequisite: Chemistry 110B or concurrent registration with consent of instructor.
Physico-chemical apparatus and measurements, with emphasis on technical report writing.

114A-114B. Clinical Biochemistry (4-4) Year Course Beginning Semester I
(Offered 1959-60 and alternate years)
Two lectures and six hours of laboratory.
Prerequisites: Chemistry 5A and 101A.
Principles of biochemistry and analytical methods applied to blood, urine, and other body fluids. This course cannot apply to the major in chemistry.

115. General Biochemistry (4) I
Three lectures and three hours of laboratory.
Prerequisites: Chemistry 5A-5B and 101A-101B, or consent of instructor.
The chemistry and metabolism of carbohydrates, fats, and proteins.

118. Colloid Chemistry (2) II (Offered 1960-61 and alternate years)
Prerequisites: Chemistry 101A, 110A, and 110B.
The theoretical principles of colloid chemistry and the preparation, properties and practical applications of colloids.

127. Advanced Inorganic Chemistry (3) II
Prerequisites: Three years of chemistry.
A lecture course dealing with such topics as the physical basis of the periodic system, complex inorganic compounds, and the nature of the chemical bond.

130. Chemistry for Elementary Teachers (3) Summer
Lectures, demonstrations, and field trips. No prerequisites.
Practical chemistry designed to develop an understanding of basic concepts, methods and materials of chemistry used in the elementary school. Not open to students with previous credit in chemistry.

131. Theoretical Organic Chemistry (3) II
Prerequisites: Chemistry 101B and 110A.
The application of modern electronic theory to the physical and chemical properties of organic compounds.

144A-144B. Principles of Chemical Engineering (3-3) Year Course Beginning Semester I
(Not offered in 1959-60.)
Prerequisite: Credit or registration in Chemistry 110A-110B.
Industrial stoichiometry, flow of fluids, heat transfer, unit processes and types of industrial equipment. Three lectures per week, problems and reports.

154. Organic Quantitative Analysis (3) I
One lecture and six hours of laboratory.
Prerequisites: Chemistry 5B or 105, and 101B.
A systematic study of the identification of organic compounds and mixtures.

155. Instrumental Methods of Analysis (3) I
One lecture and six hours of laboratory.
Prerequisites: Three year-courses in chemistry.
Theory and practice of modern methods of instrumental analysis, including use of pH meters, colorimeters, spectrophotometers, and other analytical devices. Discussions, reports, field trips, special individual projects.

160. Introduction to Nuclear Chemistry (4) I
(Not offered 1959-60.)
Two lectures and six hours of laboratory.
Prerequisite: Chemistry 1B.
The analytical and physical chemistry of the measurement and processing of radioactive materials. Not applicable to the major in chemistry.

161. Reactor Chemistry (4) II
(Not offered 1959-60.)
Two lectures and six hours of laboratory.
Prerequisite: Chemistry 160.
Chemistry of the lanthanide and actinide series and of important light elements. Fuel processing problems, selected industrial chemical methods. Separation processes. Laboratory work in the processing of fuel and fission product materials. Not applicable to the major in chemistry.

166. Honors Course (Credit to be arranged) I, II
Refer to the Honors Program.

170. Radiochemistry (3) II
One lecture and six hours of laboratory.
Prerequisites: Chemistry 5A and 110B.
Principles and techniques of radioactivity as applied to chemistry. Measurements related to radionuclides, and tracer applications.

191. Chemical Literature (1) I
Prerequisite: Upper division standing in chemistry.
An introduction to the availability, scope and use of the chemical literature.

198. Senior Project (1-6) I, II
Prerequisites: Three one-year courses in chemistry and senior standing.
An individual investigation and report on a problem. May be repeated to a maximum of six units.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisites: Open only to students who have shown ability to do A or B work in chemistry; consent of instructor.

GRADUATE COURSES

200. Seminar (2 or 3) I, II
An intensive study of some phase of advanced chemistry, such as chemical kinetics; molecular structure; photochemistry, electrochemistry. May be repeated with new subject matter for additional credit.

220. Chemical Thermodynamics (3) I
Prerequisites: Mathematics 52 and Chemistry 110B.
An introduction to the study of chemical thermodynamics.

221. Quantum Chemistry (3) II
Prerequisite: Chemistry 220.
Selected topics in thermodynamics and quantum chemistry, including an introduction to the statistical approach to quantum mechanics.

222. Chemical Kinetics (2) I
Prerequisites: Mathematics 52 and Chemistry 110B.
Theory of rate processes; applications of kinetics to the study of reaction mechanisms.

223. Physical Chemistry of Electrolytic Solutions (2) II
Prerequisite: Chemistry 220.
Theory of ionic solutions; electrode potentials, determination of activity coefficients, partial molal quantities and their applications.

230. Advanced Organic Chemistry (2) I
Prerequisite: Chemistry 101B.
Applications and limitations of organic reactions from the viewpoint of synthesis.

231. Mechanisms in Organic Reactions (2) II
Prerequisites: Chemistry 110B and 131.
Reactivity and mechanism in organic reactions.

240. Chemistry of the Less Familiar Elements (2) II
Prerequisite: Chemistry 127.
Modern inorganic theory applied to electronic configurations, periodic relationships and uses of selected less familiar elements.

250. Advanced Analytical Chemistry (2) I
Prerequisites: Chemistry 105 and 110B.
Selected topics and theories in advanced analytical chemistry.

260. Advanced Biochemistry (2) II
Prerequisites: Chemistry 110B and 115.
Discussion of selected topics emphasized in current research in carbohydrates, fats, and protein metabolism such as mechanisms of biological reactions, growth factors, and hormonal control.

270. Nuclear Chemistry (2) I
Prerequisite: Chemistry 170.
Chemistry of the actinides. Nuclear reactions, induced radioactivity. Interaction of radiation with matter, fission systematics, interpretations arising from nuclear models.

290. Bibliography (1) I, II
Exercise in the use of basic reference books, journals, and specialized bibliographies, preparatory to the writing of a master's project or thesis.

296. Directed Field Experience (1-6)
Meets the requirement of directed field experience for candidates for the master of science degree, but is not limited to candidates for the degree. May be required in addition to the 30-unit requirement for the degree.

298. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of staff; to be arranged with department chairman and instructor.

299. Thesis (3) I, II
Prerequisites: An officially appointed thesis committee and advancement to candidacy.

Guidance in the preparation of a project or thesis for the master's degree.

COMPARATIVE LITERATURE

IN THE DIVISION OF HUMANITIES

Faculty assigned to teach courses in comparative literature are drawn from departments in the Division of the Humanities.

All reading assigned for classes in comparative literature is in English translations, and no knowledge of any foreign language is required.

Major work is not offered in comparative literature; however, courses in this field may be used as part of the English major in arts and sciences. For specific information, refer to English.

COMPARATIVE LITERATURE MINOR

A *minor in arts and sciences* is offered in *comparative literature*. The minor consists of 15 to 22 units in comparative literature, nine units of which must be in courses carrying upper division credit.

LOWER DIVISION COURSES

***52A-52B. Masterpieces of World Literature (3-3) Year Course**
Beginning Semester I
(Same course as English 52A-52B)

A chronological survey from Homer to modern times. The first semester stresses the classical epic and tragedy. The second semester stresses more recent literature, including prose fiction, the drama, and the essay. Not open to students with credit for English 52A-52B. A general education course in literature, philosophy, and the arts.

UPPER DIVISION COURSES

***101A-101B. Modern Continental Fiction (3-3) Year Course**
Beginning Semester I
(Same course as English 101A-101B)

Selected works by modern novelists and short story writers of continental Europe. First semester, the late nineteenth century; second semester, the twentieth century. A general education course in literature, philosophy, and the arts.

***104A-104B. Spanish American Literature (3-3) Year Course**
Beginning Semester I
(Same course as Spanish 104A-104B.)

For a description of this course, see Spanish 104A-104B, which may be taken for credit in Comparative Literature by doing the required reading in English translation. A general education course in literature, philosophy, and the arts.

***115. The Bible as Literature (3) I**
(Same course as English 115)

A study of the narrative, poetry, and prophecy of the King James version of the Bible. Readings, reports, lectures, and discussions. A general education course in literature, philosophy, and the arts. Not open to students with credit for English 115.

***138. Introduction to Aesthetic Appreciation (1) I**
(Same course as Humanities 138)

Major forms of expressions and aesthetic experience in art, music, and literature, presented by an interdepartmental staff through lectures, demonstrations, and panel discussions. A general education course in literature, philosophy, and the arts. Not open to students with credit in Humanities 138 or in Aesthetics 138.

***140A-140B. Masterpieces of French Literature (3) Year Course**
Beginning Semester I

A cultural course designed to be given in introduction to the great French works from the Song of Roland through Cyrano de Bergerac, with emphasis on the sixteenth, seventeenth, eighteenth and nineteenth century authors. The contributions to world thinking of Rabelais, Montaigne, Moliere, Racine, Descartes, Pascal, Montesquieu, Voltaire, Rousseau, Hugo, Balzac, Flaubert, Maupassant, Zola, will be studied through lectures and outside readings. A general education course in literature, philosophy, and the arts.

***142. The Golden Age of German Literature (3) I, II**
(Same course as German 142)
Masterpieces of German literature from the eighteenth and early nineteenth centuries. A general education course in literature, philosophy, and the arts. Not open to students with credit for German 142.

***152A-152B. World Drama (3-3) Year Course Beginning Semester I**
(Same course as English 152A-152B)
Study of selected tragedies and comedies from Asiatic, European, English, and American literature, with emphasis upon the human problems depicted therein and upon the timelessness of certain themes, such as those of Electra and Medea. Lectures, discussions, and reports on readings. A general education course in literature, philosophy, and the arts. Not open to students with credit for English 152A-152B.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of instructor.

ECONOMICS

IN THE DIVISION OF SOCIAL SCIENCES

Professors: Anderson, G. K. (Chairman); Cameron; McClintic; Ryan
Associate Professors: Brookshire; Gifford
Assistant Professors: Babilot; Barckley; Bridenstine; Chadwick; Flagg; Neuner

A major and minor in economics are offered with the A.B. degree in *arts and sciences.* Courses in the major are in addition to 45 units in general education courses. Economics majors are required to complete a minor for the bachelor's degree.

A teaching minor in economics is offered in teacher education for the general secondary credential.

MAJOR

Lower Division. Economics 1A-1B and Business Administration 1A-1B.

Upper Division. Twenty-four upper division units in economics to include Economics 100A-100B and 140. Six of the 24 units may be in related fields to be selected with the approval of the departmental adviser.

MINOR IN ARTS AND SCIENCES

A minor in economics is offered in arts and sciences. The minor consists of 15 to 22 units in economics, nine units of which must be in courses carrying upper division credit.

MINOR IN TEACHER EDUCATION

General Secondary Credential

Minor for the general secondary credential: A teaching minor in economics is offered for the general secondary credential. The minor is not available to students with the broad social science major. This minor, which may be used for the A.B. degree, consists of a minimum of 21 units to include, in the lower division, Economics 1A-1B and a year course in another social science area (12 units); and in the upper division, Economics 100A and six units of upper division electives in economics (9 units).

INSTITUTE OF LABOR ECONOMICS

The Institute of Labor Economics provides materials and direction for research in labor problems, collective bargaining, labor legislation, and social security. This Institute is an activity of the Economics Department with its administration under a director. Facilities of the Economics Research Center are used by the Institute. The Economics Research Center, located in the Humanities-Social Sciences Building, provides calculating machines, drafting equipment, and a specialized collection of research materials. It serves as the meeting place for the regular faculty seminars of the Economics Department, for special research meetings, and the research activities of advanced students and faculty members in all fields.

THE MASTER'S DEGREE

The master of arts degree with a major in economics and the master of arts degree for teaching service in social science with a concentration in economics are offered. For further information, refer to the Graduate Bulletin and to the section of this catalog on the Graduate Division.

LOWER DIVISION COURSES

*** 1A. Principles of Economics (3) I, II**
An introduction to principles of economic analysis, economic institutions, and issues of public policy. This semester concentrates on aggregative economics (macro-analysis), including money and banking and national income. (Prior to and during the fall semester, 1959, macro-analysis was included in Economics 1B.)

*** 1B. Principles of Economics (3) I, II**
Prerequisite: Economics 1A.
An introduction to principles of economic analysis, economic institutions, and issues of public policy. This semester emphasizes the allocation of resources and the distribution of income through the price system (micro-analysis), and international economics. (Prior to the fall semester, 1958, micro-analysis was included in Economics 1A.)

UPPER DIVISION COURSES

100A. Intermediate Economic Theory (3) I, II
Prerequisites: Economics 1A and 1B.
Economic theory with special reference to the theory of the firm and the industry; value and distribution.

100B. Intermediate Economic Theory (3) I, II
Prerequisites: Economics 1A and 1B.
Economic theory with special reference to national income analysis and the theory of investment.

102. Comparative Economic Systems (3) II
Prerequisites: Economics 1A and 1B.
The economic aspects of laissez-faire and regulated capitalism, co-operatives, socialism, communism, nazism, fascism. Experience in Russia, Germany, United States, Great Britain. Criteria for evaluating economic systems. The individual and government in each system. Planning in a liberal capitalistic society.

107. Introduction to Econometrics (3) I
Prerequisites: Twelve units in economics, including Economics 140.
Use of mathematics in economic analysis; application of commonly used equations, symbols, and measurements to economic problems.

***110. Economic History of Europe (3) I**
Prerequisites: Economics 1A and 1B, or consent of instructor.
A general survey of economic development from the Middle Ages to the present. Particular attention is given to the impact of the Industrial Revolution on national economies, especially on England's commerce and industry. A general education course in the social sciences.

***111. Economic History of the United States (3) II**
Prerequisites: Economics 1A and 1B, or consent of instructor.
A comprehensive survey of American economic development and of national legislation in the field of industry and commerce. A general education course in the social sciences.

127. Agricultural Economics (3) II
Prerequisites: Economics 1A and 1B.
The issues of economic planning and control of agriculture. The nature of such problems as surplus production, low income and population change. Evaluation of price controls, crop restrictions and other programs and proposals.

131. Public Finance (3) II
Prerequisites: Economics 1A and 1B.
Principles and practices of taxation and public expenditures. Economic effects of public spending, debts and taxation. Financing social security and other services. Fiscal policy and prosperity. Relation to inflation and deflation. Special emphasis on social problems involved.

133. Corporation Finance (3) I, II
(Same course as Business Administration 131)
Prerequisites: Economics 1A and 1B.
The corporate form of organization; instruments of long-term finance; methods of raising capital, efficient financial management, financing of organizations, and government control. Not open to students with credit in Business Administration 131.

135. Money and Banking (3) I, II
Prerequisites: Economics 1A and 1B.
The elements of monetary theory. History and principles of banking with special reference to the banking system of the United States.

138. Urban Land Economics (3) I
Prerequisites: Economics 1A and 1B.
Analysis of major influences affecting city location and growth; role of private and governmental institutions in influencing residential and other uses of land; major considerations in appraising, managing, financing, marketing, developing and taxation of urban property. Discussion of San Diego problems.

139. Real Estate Principles and Practices (3) II
(Same course as Business Administration 170)
Prerequisites: Economics 1A and 1B.
Functions and regulation of the real estate market; transfers of property, including escrows, mortgages, deeds, title insurance; appraisal techniques; financing methods; leases, subdivision development; property management. Not open to students with credit in Business Administration 170 or 127.

140. Statistical Methods (3) I, II
Prerequisites: Economics 1A, 1B and Mathematics 3 at this college with grade of C or better, or Mathematics 21, or qualification by examination on subject matter of Mathematics 3.
Introduction to descriptive statistics, statistical inference, correlation, index numbers, and time series. Not open to students with credit for another upper division course in statistics.

142. Business Cycles (3) I
Prerequisites: Economics 1A and 1B.
Fundamental factors in business cycles are analyzed and cycle theories are examined. Study of current business conditions begins early in the course and develops into practical application of forecasting methods to both business and other data.

150. Labor Problems (3) I, II
Prerequisites: Economics 1A and 1B.
A study of labor organizations and their policies, wages, strikes, unemployment, social insurance, child labor, labor legislation, plans for industrial peace, and other labor problems.

151. Labor Legislation (3) I
Prerequisites: Economics 1A and 1B.
Labor-management relations; fair labor standards; arbitration and conciliation of industrial disputes. Federal, state and local laws dealing with these subjects.

152. Collective Bargaining (3) II
Prerequisites: Economics 1A and 1B.
Structures of labor relations; management and union problems; public policy and collective bargaining; conditions of successful collective bargaining.

166. Honors Course (Credit to be arranged) I, II
Refer to the Honors Program.

***170. Government and Business (3) I, II**
Prerequisites: Economics 1A and 1B, or consent of instructor.
General survey of governmental activities affecting business; the state as an entrepreneur and manager; governmental assistance to business; governmental regulation of business in its historical, legal and economic aspects, including recent developments in the United States and abroad; proposed policies. A general education course in the social sciences.

171. Transportation Economics (3) I
Prerequisites: Economics 1A and 1B.
Economic impact of the availability and cost of transportation services. Organization, rate-making practices, financing and regulation of transportation agencies: air, surface, and water. Current issues of national transportation policy.

172. Public Utilities (3) II
Prerequisites: Economics 1A and 1B.
The growth of public utilities in the United States; economics of public utility rates; valuation; public regulation and its legal basis; public ownership; transportation problems.

173. Economics of Energy and Water Resources (3) I
Prerequisites: Economics 1A and 1B.
Institutional arrangements and public policies governing energy and water resource utilization. Relevant aspects of the electric power and fossil fuel industries (coal, petroleum, natural gas). Developments in economic aspects of nuclear energy. Water resource programs and projects emphasizing California developments.

174. Economic Concentration and Monopoly Power (3) I
Prerequisites: Economics 1A and 1B.
The implications of economic concentration and monopoly. The evaluation of mergers, consolidations and other forms of monopoly power in terms of social and economic goals. Attempts to control monopoly power by antitrust laws, by policies regarding competitive practices and by other means.

185. Social Insurance (3) II
Prerequisites: Economics 1A and 1B.
Old age pensions, health insurance, unemployment insurance, and Social Security Act. Strength and weakness of existing systems.

190. International Economics—Principles (3) I
National welfare and foreign trade. Principle of comparative costs, comparative advantages in various nations. Foreign exchange and the balance of payments, financing foreign trade. Regulations over trade and obstructing factors. Doctrines of international trade.

195. International Economics—Problems (3) II
Prerequisites: Economics 1A and 1B.
Important aspects of international co-operation and conflict in the economic sphere, conditions essential to future co-operation. The quest for foreign markets, raw materials, investment opportunities and population outlets. Commercial policies, international economic conferences and organizations. Colonial rivalries and postwar problems.

198. Investigation and Report (3) I, II
Prerequisite: For economics majors only.
Designed to stimulate independent study and investigation; to furnish guidance in the collection, organization, and presentation of factual material; to improve the technique of term reports.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of instructor.

GRADUATE COURSES

200A-200B. Seminar in the Development of Economic Thought (3-3)
Year Course Beginning Semester I
Prerequisites: Twelve units in economics.
A critical study of the development of economic thought.

203A-203B. Seminar in Advanced Economic Theory (3-3)
Year Course Beginning Semester I
Prerequisites: Economics 100A and 100B.
Individual research, seminar reports, group discussion of problems in economic theory.

231. Seminar in Public Finance (3)
Prerequisite: Economics 131.
Advanced study of public finance problems and literature; research.

235. Seminar in Money and Banking (3)
Prerequisite: Economics 135.
Individual research, seminar reports and group discussion of selected economic problems related to the structure and functioning of the financial system.

250. Seminar in Labor Economics (3)
Prerequisites: Economics 150 and 151.
Individual study and group discussion of selected topics in labor economics.

290. Bibliography (1)
Exercises in the use of basic reference books, journals, and specialized bibliographies, preparatory to the writing of a master's thesis.

295. Seminar in International Economics (3)
Prerequisites: Economics 190 and 195.
Individual and group research into selected topics; group discussion of procedures and results.

298. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of staff; to be arranged with department chairman and instructor.

299. Thesis (3)
Prerequisites: An officially appointed thesis committee and advancement to candidacy.
Guidance in the preparation of a thesis for the master's degree.

EDUCATION

IN THE DIVISION OF EDUCATION

Professors: Alcorn; Apple; Ballantine; Brydegaard; Carlson, T. R.; Friedrich; Gjerde; Grisier; Houseman; Hunter; Kinder; Koester (Chairman); Linley; Madden; Schrupp (Dean); Schunert; Stough; White, A. E.

Associate Professors: Anderson, E. L.; Anderson, P. S.; Bacon; Baker, D. L.; Campbell; Crum; Fisher; Fulkerson; Gates; Jarolimek; Karlsen, B.; Klemer; Malcolm; Nardelli; Prouty; Roemmick; Schwob; Trimmer

Assistant Professors: Anderson, C. D.; Birch; Briggs; Bruce; Carey; Falk; Fishburn; Foster, C. D.; Geer; Gega; Groff; Grotke; Hill, W. O.; Koehn; Lienert; McVay; Miller; Person; Petteys; Platz; Rodney; Schmidt, J. L.; Smith, H. R.; Strand; Walsh, M. A.; Wetherill; Wheeler

Instructors: Reel; Tanzer

Lecturers: Baumgartner; Epler; Walt

THE CREDENTIAL PROGRAMS

For a complete description of credential programs, see the section of the catalog on *Professional Curricula in Teacher Education.*

GENERAL ELEMENTARY AND KINDERGARTEN-PRIMARY

CREDENTIAL REQUIREMENTS

A major in elementary education is offered with the A.B. degree and general elementary or kindergarten-primary credential in teacher education. A student may take a program leading to the general elementary credential or a combination program leading to the general elementary and kindergarten-primary credentials. All students must complete 45 units in general education courses, the lower division prerequisites for the credential and degree, a major in elementary education, and a minor selected from those listed below.

Prerequisites

Prerequisites for Both Credentials. Art 9 and 10, or equivalents; Music 7A, which may be counted in general education, Music 7B; Physical Education 53; and Geography 1 and 2, both of which may be counted in general education (21 units). Additional prerequisites for the kindergarten-primary credential: Music 10A-10B, or qualifying by examination (2 units).

Major in Elementary Education

Major for Both Credentials. 39-43 upper division units to include the following courses: Education 112, 151 (6 units); Education 130 (13 units); Education 131 (7 units); Education 111 (2 units); Education 101 (2 units); Education 181 (7 units); Health Education 150 (2 units). Additional requirement for the kindergarten-primary credential: Education 132 (4 units).

Minors for the Credentials

Minor for Both Credentials. The minor, which is described in this section of the catalog under the heading of the department offering the minor, must be selected from the following:

English
Foreign languages
  (French, German, Spanish, Romance languages)
General science
Industrial arts
Mathematics
Physical education
Social science
Speech arts (creative or speech correction)

Students taking the general elementary credential in combination with a special secondary credential may use the major in the special secondary field for the minor in the elementary field.

EDUCATION MINOR IN ARTS AND SCIENCES

A minor in education is offered in arts and sciences. This minor consists of 15 to 22 upper division units in education selected with the approval of the division chairman. Students will be admitted to education courses only when they are admitted to teacher education or have permission from the division chairman. Experienced teachers may take education courses for which they have the prerequisites. Students who take the minor in education must have been regularly admitted to teacher education. Refer to the section of this catalog on Admission to Teacher Education.

THE MASTER'S DEGREE

The master of arts degree with a major in education with concentrations in nine areas is offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

LOWER DIVISION COURSES

A. Review of Arithmetic (0) I, II

H. Review of Handwriting (0) I, II

R. Review of Reading (0) I, II

S. Review of Spelling (0) I, II

Noncredit courses designed to increase competence in the skill subjects. For students who do not qualify on the respective sections of the Fundamentals Test required of all applicants to elementary teacher education.

UPPER DIVISION COURSES

Social Foundations

100. The Secondary School (4) I, II

Three lectures and three hours of laboratory and/or field work, including audio-visual experiences.

Orientation toward understanding teaching as a profession, and the public school as a social institution. Overview of philosophy, history, aims, scope, function, outcomes, principles, and problems of American elementary and secondary education.

101. History and Philosophy of Education (2) I, II Summer

Prerequisites: Senior standing and a minimum of 12 units of education.

Historical backgrounds and underlying philosophies upon which the public school system has been established. Emphasis on the meaning of education, educational aims and values, and democracy and education.

102. Secondary Education (3) Irregular

An introduction to understanding the development of secondary education and its present status as a social institution.

Psychological Foundations

110. Development and Learning (4) I, II

Three lectures and three hours of laboratory and/or field work.

Prerequisite: Education 100.

To acquaint the student in secondary education with the nature of development and the learning process, with consideration of mental hygiene, guidance and the place of audio-visual aids.

111. Educational Psychology (2) I, II Summer

(Same course as Psychology 130)

Prerequisite: Psychology 1.

To develop understanding of the applications of psychological research for effective classroom teaching. Observation and field work required. Not open to students with credit for Psychology 130.

112. Child Growth and Development (2) I, II Summer

Should precede Education 151 for elementary credential candidates.

Study of the mental, emotional, social, and physical development during childhood and early adolescence. Directed observation required.

113. Growth and Development of the Adolescent (3) Irregular

Study of adolescent physiological, psychological, social, and emotional development, including principles of mental hygiene and guidance. Field work with adolescent groups in the community is required.

114. Interpretation of Early Childhood Behavior (3) Irregular in Summer

For kindergarten-primary teachers treating the analysis and interpretation of early childhood behavior. Emphasis on understanding and interpreting the causative factors in typical behavior of children to parents, social workers, teachers, and others concerned with the guidance of kindergarten-primary children.

115. Guidance in Elementary Education (3) I, II Irregular

A study of the basic principles of guidance and their function in the educational process as applied in the elementary school.

116A-116B-116C. Child Study Laboratory (2-2-2) I, II

Development of background and procedures for child study and their application to field situations. Field work required. For teachers in service. Education 116A is prerequisite for 116B, and 116B is prerequisite for 116C.

118. Supervision of Child Welfare and Attendance (3) Irregular

Content includes laws relating to children, guidance principles, social casework, agency relationships, conference techniques, home visitation methods, employment supervision, attendance work, child accounting, familiarity with testing techniques.

Methods—Secondary

120. The Teaching Process (4) I, II

Three lectures and three hours of laboratory and/or field work.

Prerequisites: Education 110 and concurrent registration in Education 180 or 316A.

To develop teacher competency at the secondary level in professional and community relationships, and in planning teaching, and evaluating learning activities (with emphasis on the use of audio-visual resources and the development of class morale).

121. Methods and Materials of Instruction and Audiovisual Aids Major (2), Minor (2)

Lecture courses, except that Education 121K and 121N meet for one lecture and three hours of laboratory.

Professional courses in specific teaching fields taken just prior to or concurrently with the first directed teaching assignment. Each course emphasizes the application of best practice with reference to each subject area named.

Subject fields for sections in 121 are as follows:

Offered in the Fall Semester

121A. Methods in Art
121B. Methods in English
121C. Methods in Homemaking Education
121D. Methods in Industrial Arts
121E. Methods in Foreign Languages
121G. Methods in Music
121H. Methods in Phys. Ed. (Men)
121J. Methods in Phys. Ed. (Women)
121K. Methods in Physical Science
121L. Methods in Speech Arts
121M. Methods in Social Science

Offered in the Spring Semester

121B. Methods in English
121D. Methods in Industrial Arts
121F. Methods in Mathematics
121N. Methods in Life Science
121J. Methods in Phys. Ed. (Women)
121M. Methods in Social Science

Offered Irregularly

121P. Methods in Health Education
121Q. Methods in Accounting
121R. Methods in Merchandising
121S. Methods in Shorthand
121T. Methods in Secretarial Subjects
121U. Methods in Typing

122. Reading in Secondary Education (3) Irregular

The nature of the reading program, development of techniques and skills, vocabulary development, reading in the content fields, the differentiated attack, measurement, diagnosis, and remediation.

123. Driver Education (2) Summer

Prerequisite: Consent of instructor.

A workshop type course designed to prepare teachers of the course in high school.

124. Advanced Driver Education (2) Summer

Prerequisite: Education 123.

An advanced workshop dealing with special problems in driver education, including legal and sociological aspects, administration, and special training techniques.

125. Organization and Administration of Music Education (2) II

Administration of an instrumental music program: purchase, care, depreciation of instruments and equipment; developing interest; ethics; schedule-making; operation and maintenance of music library; personnel and equipment records; the achievement point system; the marching band show; rehearsal procedure.

126. Workshop in Secondary Education (3 or 6) Summer

Designed to meet the needs of individuals or groups of teachers who wish to develop or continue the study of some problem with the consultation of the college staff and the San Diego County Curriculum Staff.

Methods—Elementary

130. First Elementary Education Practicum (13)
Prerequisite: Admission to elementary education.
Curriculum, principles, methods and materials of instruction (including audio-visual), and participation in elementary education, in the areas listed in A through G below.

- **130A. Arithmetic in Elementary Education (2-3) I, II, Summer**
- **130B. Art in Elementary Education (2) I, II, Summer**
- **130C. Language Arts in Elementary Education (2-3) I, II, Summer**
- **130D. Music in Elementary Education (2) I, II, Summer**
- **130E. Reading in Elementary Education (2-3) I, II, Summer**
- **130F. Observation and Participation (2) I, II**
- **130G. Curriculum (1) I, II**

131. Second Elementary Education Practicum (7)
Prerequisite: Education 130.
Curriculum, principles, methods and materials of instruction (including audio-visual), and participation in elementary education, in the areas listed in A through D below.

- **131A. Social Studies in Elementary Education (2-3) I, II, Summer**
- **131B. Science in Elementary Education (2-3) I, II, Summer**
- **131C. Directed Teaching (2) I, II**
- **131D. Curriculum (1) I, II**

132. Kindergarten-Primary Practicum (4) I, II, Summer
Prerequisites: Education 130 and 131.
A continuation of Education 131 and will accompany Education 181 in the kindergarten. A study of the theory of early childhood education providing experience with children of nursery school and kindergarten ages.

133. Children's Literature in Elementary Education (3) Irregular
Criteria for the selection of children's literature, children's reading interests, the development of units of instruction in the social studies, the use of the verse, choir, dramatic readings and similar procedures, and the use of the library.

134. Laboratory in Elementary Education (3) Summer
A general course in observation and theory, including a study of arithmetic, reading, language, music, science, social studies, art, spelling. Students in this course will observe in the summer demonstration school and discuss with the staff the teaching procedures.

135. Workshop in Elementary Education (3 or 6) Irregular
To meet the needs of individual or groups of teachers who desire to study selected problems in elementary education. The observation of classroom teaching will be provided for members in attendance. Interested persons should correspond with the Coordinator of Elementary Education, San Diego State College.

136. Music Literature for Elementary Teaching (3) Summer
Prerequisites: Music 7A and teaching experience, or consent of instructor.
Music literature for singing, expressive movement, listening, playing instruments, and creative activities, stressing integration of these activities with the total classroom program.

137. Reading Difficulties (3) I Summer
Prerequsites: Education 112 and 130E or 122, or consent of instructor.
Reading difficulties, their causes, prevention, and correction. Remedial practices in reading useful to the classroom teacher, school counselor, and reading specialist.

138. Curriculum in Elementary Education (3) Irregular
Emphasis upon the selection and development of content, teaching methods, and materials as they relate to social needs; evaluation procedures; psychological principles, and the nature of the learner.

Audiovisual

140. Audiovisual Instruction (3) I, II Summer
Three lectures and two hours of laboratory.

Audiovisual materials and techniques as they affect learning; operation of equipment.

141. Creating Audiovisual Materials for Classroom Use (3) Irregular
Prerequisite: Education 140.

Practice in the creation and evaluation of instructional materials, such as 35 mm. filmstrips, 16 mm. films, scripts, recordings and other audiovisual materials.

143-S. Workshop in Educational Television (6) Summer
(Same course as Speech Arts 143-S)

Open to teachers and students interested in instruction by television.

The procedures and theories of television production as it pertains to closed-circuit and instructional use of television. The selection and utilization of program content and the method of presenting material through the television medium will be discussed and demonstrated. Not open to students with credit for Speech Arts 143-S.

Measurement

150. Psychological Testing (3) I, II (Same course as Psychology 105)
Prerequisite: One of the following courses: Psychology 104A, Education 151, 152, 120, or a semester of statistical methods in any other department.

The basic principles of testing. The selection and critical evaluation of group tests of intelligence, personality, aptitude, interest and achievement.

151. Measurement and Evaluation in Elementary Education (3) I, II Summer
Should follow Education 112 for elementary credential candidates.

The use of intelligence and achievement tests in the diagnosis and improvement of learning; construction of objective examinations; problems of evaluation in education; the elements of statistical techniques.

152. Measurement and Evaluation in Secondary Education (2) Irregular
Prerequisite: Education 111.

Problems of evaluation in secondary education, construction of examinations, the elements of statistics, the selection and interpretation of standardized measures.

Honors Course

166. Honors Course (Credit to be arranged) I, II
Refer to the Honors Program.

Exceptional Children

170. Exceptional Children (3) I, II Summer
Characteristics and adjustment problems of mental, physical, and emotional deviates.

171. Curriculum and Methods for Mentally Retarded Children (3) II or Summer
Selection, organization and presentation of curricular materials for mentally retarded children.

172. Workshop for Teaching the Mentally Retarded (3-6) Summer
Curriculum and methods of teaching, integrated with a demonstration class. Particular emphasis on the arts and crafts program. Opportunities will be provided for teachers to develop materials of instruction. To meet California credential requirements in the areas described. Students with credit for Education 171 are limited to enrollment in 3 units.

173. Vision Testing and Hygiene (2) Irregular
Measurement of visual acuity including an analysis of vision tests, hygiene and physiology of the eye, conservation of sight, and classroom adaptation for the visually handicapped.

174. Principles and Methods of Speech Correction (3) II

(Same course as Speech Arts 174)

Three lectures and 25 hours of clinical participation, or a special study for nonparticipants.

Prerequisites: Speech Arts 150 and 170, or consent of instructor.

Etiology and treatment of the more common speech disorders, including physiology of speech, voice disorders, cleft palate, foreign dialect. Not open to students with credit in Speech Arts 174.

176. Stuttering and Neurological Disorders (3) I

(Same course as Speech Arts 176)

Three lectures and 25 hours of clinical participation, or a special study for nonparticipants.

Prerequisites: Speech Arts 150 and 170.

Clinical survey of newest methods of speech correction. Special emphasis given to causes and treatment of stuttering, cerebral palsy speech problems and aphasia in adults and children. Not open to student with credit in Speech Arts 176.

177. Aural Rehabilitation (3) I

(Same course as Speech Arts 177)

The adjustment of the hard-of-hearing group with emphasis on the public school child. State and county hearing programs; audiometric techniques with practice; educational, classroom, and social problems. Meets audiometric certification requirement. Not open to students with credit in Speech Arts 177.

178. The Teaching of Lipreading (2) II

(Same course as Speech Arts 178)

History, theory and methods of lipreading. Aids for the classroom teacher; program and materials of instruction for the specialized teacher. Not open to students with credit in Speech Arts 178.

Student Teaching

180. Directed Teaching—Secondary (2-12) I, II

Prerequisites: Admisison to teacher education and education program approved by the Coordinator of Secondary Education. Any grade below a C is unacceptable for a credential.

Systematic observation, participation and teaching under supervision in a junior or senior high school. During each semester of student teaching a weekly conference period is required as indicated in the time schedule.

181. Directed Teaching—Elementary (2-12) I, II

Prerequisites: Admission to teacher education and education program approved by the Coordinator of Elementary Education. Any grade below C is unacceptable for a credential.

Systematic observation, participation and teaching under supervision in the Campus Elementary School or affiliated elementary schools. During each semester of student teaching a weekly conference period is required as indicated in the time schedule.

182. Directed Internship (1-6) I, II

Preregistration required. Application should be made during the preceding semester.

Extensive daily participation or teaching in public schools in preparation for a second credential when directed teaching has been taken for a prerequisite credential.

Conference and Special Courses

190. Conference on the Teaching of Mathematics (1) Summer

May be taken three times for credit.

Lectures, discussions, and demonstrations on problems in teaching of mathematics in the elementary and secondary schools. Designed for teachers, supervisors, and administrators interested in current developments in this area.

191. Guidance Conference (1) Summer
Prerequisite: Consent of director of the conference. Course may be taken three times for credit.

A series of lecture and discussion sessions centering on current problems in counseling and guidance. Designed to serve the needs of any person desiring to keep informed of developments in this area.

192. Audiovisual Conference (1) Summer
May be taken three times for credit. Course does not fulfill credential requirement.

A series of lectures, discussions and demonstrations, centering on problems in the use of audiovisual instructional materials. Designed for teachers, administrators, audiovisual representatives, and others interested in current developments in this area.

E-197. Problems in Education (Credit to be arranged) Extension
Prerequisite: Consent of instructor.

Class study of specially selected problems in education. Does not apply to pattern requirements for credentials. Offered only in extension.

199. Special Study (1-6) I, II, and Summer
Individual study. Six units maximum credit.

Prerequisites: Open only to senior and graduate students in education who have shown ability to work independently; consent of instructor.

GRADUATE COURSES

Prerequisites for All Graduate Courses

For requirements for admission to graduate courses, refer to the section of this catalog on the Graduate Division. In addition to these general requirements, 12 units of professional education courses are prerequisite for enrollment in all graduate courses in education.

Sociological Foundations

201. The Junior College (2) I
Fieldwork, including observation and audiovisual experiences required.

Overview of philosophy, history, aims, scope, function, outcomes, principles and problems of the junior college. Relation of the junior college to elementary and secondary schools and to four-year colleges.

204. Comparative Education (3) I, Summer
The contemporary educational ideas and practices of various countries of the world and their impact upon our culture and education.

205. History of Education (3) Irregular
Prerequisite: Education 101.

Advanced study of the history of education with emphasis on educational practices as related to present day problems.

206. Philosophy of Education (3) Irregular
Prerequisite: Education 101.

Advanced study of philosophical backgrounds of educational thought; a study of comparative philosophies, and an analysis of selected current trends and problems.

207. Education Sociology (3) Irregular
Prerequisites: Education 101 and teaching experience.

A study of the social, economic, political and moral setting in which present day American education functions.

208. Workshop in Community Influences on Learning and Curriculum Planning (3 or 6) Summer
Prerequisite: Teaching experience.

Advanced study of community influences on learning and child growth and development, and of group techniques; implications for curriculum planning. Provides opportunity for work on individual problems of the participants.

Educational Psychology

220. Advanced Educational Psychology (3) I, II, Summer
Prerequisites: Education 111 and teaching experience.
Advanced study of research and its application to learning and human growth.

221. Seminar in Educational Measurement (3) Summer
Prerequisite: One of the following: Education 150, 151, or 152.
Problems in educational testing. Emphasis upon construction, administration, and validation of teacher-made tests.

222. The Gifted Child (3) I, Summer
Prerequisites: Education 112 and 113, or Education 110.
The abilities and characteristics of the intellectually gifted or talented; related problems of curriculum, teaching, administration and guidance.

223. Educational Psychology: Junior College (2) I
Fieldwork required.
Prerequisite: Credit or concurrent registration in Education 201.
The nature of the junior college student; the learning process including contributions of audiovisual materials. The functions of student personnel services in the junior college.

230. Guidance Problems in Secondary Education (3) I, II, Summer
Prerequisite: Education 110.
The theory and practice of guidance emphasizing advanced mental hygiene concepts needed by teachers and counselors.

231. Techniques of Pupil Appraisal (3) I, II or Summer
Prerequisites: Psychology 104A and either Education 152 or 151.
Techniques of collecting, assembling, and interpreting data about individual pupils for guidance purposes. Fieldwork required.

232. Problems in Vocational Guidance (3) I, Summer
Prerequisites: Education 230 and 231.
To prepare counselors for vocational guidance in secondary schools. Emphasizes group and individual procedures for assisting pupils to understand and integrate vocational and self information.

233. Guidance Counseling Techniques (3) I, II
(Same course as Psychology 233)
Prerequisite: Education 115 or 230, or Psychology 151.
Designed for school counselors. To stress the understandings and procedures necessary for effective interviewing. Not open to students with credit in Psychology 233.

234. Administration of Pupil Personnel Services (3) I, Summer
Prerequisite: Education 230.
The organization and administration of school guidance services, including the use of community resources and a study of laws relating to children and child welfare.

237. Research in Guidance Problems (1-3) Summer
Individual study by graduate students who have demonstrated exceptional ability and a need for such work. Admission by permission of the Coordinator of Secondary Education and instructor.

238. Fieldwork in School Guidance (3) II
Prerequisites: Consent of instructor and 12 units in guidance and related areas.
Application of the principles and procedures in testing, counseling, and related personnel work in the public school. Weekly seminar sessions with college and cooperating staff.

239. Workshop in Pupil Personnel Services (3) Summer
Prerequisites: Teaching experience and consent of director of the workshop.
Application of principles and procedures to specific situations for improvement of pupil personnel services. Individual problems emphasized.

Elementary Education

240. Curriculum Construction and Evaluation in Elementary Education (3) I, II, Summer

Prerequisites: 12 units of work in elementary education and consent of instructor.

Advanced study of the research in curriculum development, construction, and evaluation.

241. Problems in the Teaching of Arithmetic (3) Irregular

Prerequisite: Education 130A.

A study of research and practice in the methods of teaching and in the curriculum of elementary and junior high school arithmetic.

242. Problems in the Teaching of Reading (3) Irregular

Prerequisites: Education 130E and 137.

Advanced study of trends in reading instructions. Topics include developmental sequences in reading skills and abilities, reading in the content fields, individual differences, and interests. Students will develop individual projects or problems.

243. Seminar in Social Studies in Elementary Education (3) Irregular

Prerequisite: Consent of instructor.

Advanced study of problems in teaching social studies in the elementary school with emphasis on the study of the scientific research in the field.

244. Seminar in Language Arts in Elementary Education (3) Irregular

Prerequisite: Consent of instructor.

Advanced study of problems in teaching language arts in the elementary school, including spelling, literature and written and oral communication. Emphasis will be on the study of scientific research in the field.

245. Seminar in Elementary Education (3) Irregular

Prerequisites: 12 units in elementary education and consent of instructor.

A study of the methodology of research with particular reference to the basic research in the psychology and teaching of the elementary school subjects.

246. Advanced Diagnosis in Reading (3) II, Summer

Prerequisites: Psychology 204 and Education 137, or consent of instructor.

Principles and techniques of individual and group diagnosis of reading difficulties. Experience in administration and interpretation of individual and group instruments of diagnosis.

247. Advanced Diagnosis and Treatment of Learning Difficulties (3) II, Summer

Prerequisites: A teaching credential and Education 151 or 152.

Principles and techniques of diagnosis and treatment of difficulties in learning the school subjects. Supervised experience in working with individual pupils and their parents.

Secondary Education

250. Curricular Problems in Secondary Education (3) I, II, Summer

Prerequisites: 12 units in secondary education and consent of instructor.

Present status and development of the secondary school curriculum with emphasis upon curriculum construction and curriculum evaluation. Opportunities provided for study of problems submitted by students.

251. Instructional Methods and Materials: Junior College (2) II

Prerequisites: Education 223 and concurrent registration in Education 316A.

The teaching process at the junior college level, including lesson planning, utilization of audiovisual and other instructional materials and procedures of evaluation.

252. General Education in the Secondary School (3) Summer

Prerequisites: 12 units in secondary education and consent of instructor.

A course designed for teachers in service. A study of the function and implementation of general education in the secondary school.

254. Advanced Problems in Secondary School Instruction (3) II, Summer

Prerequisites: Teaching experience and consent of instructor.

An analysis of the scientific research and philosophical principles in secondary school instruction.

256. Recent Trends in Secondary Curriculum (3) Irregular

Prerequisites: 12 units in secondary education and consent of instructor.

Current practices and trends in secondary schools. Extensive individual work on related problems of interest to members of the class.

257. Workshop in Intercultural Education (4) Summer

Enrollment only by application to the Dean of Education.

A cooperative workshop sponsored by the college and the San Diego City Schools to study trends in intercultural education in American schools, including units, curricular and instructional materials and techniques.

258. Research in Curricular Problems (1-3) Irregular

Admission by consent of the Coordinator of Secondary Education and the instructor.

Individual study by graduate students who have demonstrated exceptional ability and a need for such work.

School Administration and Supervision

260. Federal, State, County and City School Organization and Administration (3) I, II, Summer

Prerequisite: Possession of a valid teaching credential.

A study of federal, state, county and city school organization and administration including the interrelationships of the four levels.

262. The Organization and Administration of Elementary Schools (3) I, Summer

Prerequisites: Possession of a general elementary credential, teaching experience, Education 115, 240, 260, 270 and admission to the program of Administrative Studies.

A study of the problems of personnel, local finance, curriculum, school plant and community relations of elementary schools. Field project required.

263. The Organization and Administration of Secondary Schools (3) I, Summer

Prerequisites: Possession of a valid general secondary credential, teaching experience, Education 230, 250, 260, 270 and admission to the program of Administrative Studies.

A study of the problems of personnel, local finance, curriculum, school plant, transportation and community relations of secondary schools. Field project required.

264. Elementary School Supervision (3) II, Summer

Prerequisites: Possession of a general elementary credential, teaching experience, Education 115, 240, 260, 270 and admission to the program of Administrative Studies.

Principles and practices of supervision and methods of evaluating instruction and the curriculum in elementary education. Field project required.

265. Secondary School Supervision (3) II, Summer

Prerequisites: Possession of a general secondary credential, teaching experience, Education 230, 250, 260, 270 and admission to the program of Administrative Studies.

Principles and practices of supervision, curriculum and teaching methods in secondary education. Field project required.

266. Fieldwork in Elementary School Administration and Supervision (3) I, II

Prerequisites: Prior to registration in the course, admission to the program of Administrative Studies, completion concurrently of all other requirements for the elementary administration or supervision credential, and permission of local school administrator and the instructor.

Study of the administration and supervision of an elementary school with the cooperation of a local school administrator and under the supervision of a college staff member. Field projects required.

267. Fieldwork in Secondary School Administration and Supervision (3) I, II

Prerequisites: Admission to the program of Administrative Studies, completion concurrently of all other requirements for the secondary administration or supervision credential, and permission of local school administrator and the instructor.

Study of the administration and supervision of a secondary school with the cooperation of a local school administrator and under the supervision of a college staff member. Field projects required.

268. Seminar in School Administration (3) Summer
Prerequisite: Consent of instructor.
An intensive study of research on selected problems in the field of school administration. Provision will be made for individual work on special topics of interest to students.

270. School Finance, Business Administration, and Law (3) I, II, Summer
Prerequisite: Possession of a valid teaching credential or consent of instructor.
A study of public school finance at federal, state and local levels; an analysis of the business administration of schools and a study of school law as it applies to finance, administration and other aspects of school administration.

271. Supervision of Student Teaching (2) Irregular
Prerequisite: Open to experienced teachers interested in the teacher education program.
Study of selection, orientation, induction, counseling and evaluation of credential candidates and student teachers; and helping student teachers plan lessons, conduct classroom learning, analyze pupils' difficulties and achievement.

274A. Utilizing Audiovisual Materials in the Classroom (3) I, Summer
Prerequisite: Education 140.
A critical analysis of research evaluating the use of visual, auditory, and other sensory materials in education.

275. Administering the Use of Audiovisual Materials (3) II, Summer
Prerequisite: Education 140 or consent of instructor.
Organizing, supervising, and coordinating audiovisual centers as an integral part of educational systems.

278. Educational Leadership (3) I, II, Summer
Prerequisite: Possession of a valid teaching credential or consent of instructor.
An analysis of the factors and practice in procedures of group and individual leadership in four areas: (a) the community; (b) the teaching staff; (c) the student personnel; (d) the professional field of educational administration and supervision.

Procedures of Investigation

290A. Procedures of Investigation and Report (2) I, II, Summer
Prerequisite: For majors in education, concurrent registration in 290B.
Methods of investigation, data analysis, and reporting. Procedures for selecting topics and writing papers, projects, and thesis. Exercises in locating, selecting, analyzing, and summarizing professional literature.

290B. Bibliography (1) I, II, Summer
Exercises in the use of basic reference books, journals, and specialized bibliographies preparatory to a seminar project or to the writing of a thesis.

295A-295B. Seminar (3-3) I, II, Summer
Prerequisite: Satisfactory score on the Graduate Comprehensive Examination in Education.
An intensive study in selected areas of education culminating in a written project. Limited to students following Plan B for the master of arts degree in education.

298. Special Study (1-6) I, II, Summer
Individual study. Six units maximum credit.
Prerequisite: Consent of staff; to be arranged with department chairman and instructor.

299. Thesis (3) I, II, Summer
Prerequisites: An officially appointed thesis committee and advancement to candidacy.
Guidance in the preparation of a project or thesis for the master's degree.

Student Teaching and Internship

316A. Directed Teaching (3-7) I, II
Prerequisites: Admission to teacher education; education program approved by the Coordinator of Elementary or Secondary Education. Any grade below C is unacceptable for a credential.

Systematic observation, participation and teaching under supervision in the campus elementary school, the affiliated elementary, junior high and senior high schools. During each semester of student teaching a weekly conference period is required as indicated in the time schedule.

316B. Directed Internship (2-6) I, II
Preregistration required: Course may be repeated for additional credit with new content.

Extensive daily participation or teaching in public schools in preparation for a second credential when Directed Teaching has been taken for a prerequisite credential.

ENGINEERING

IN THE DIVISION OF ENGINEERING

Professors: Capp (Chairman); Morgan; Shutts; Walling
Associate Professors: Lodge; Stone, H. L.; Stone, S. H.
Assistant Professors: Bauer; Johnson, P. E.; Mann; Quiett; Rao
Instructor: Bilterman
Lecturers: Augustine; Hull; Schmitt, A. F.; Sholders

The engineering program is designed to give the student a sound training in the fundamentals of engineering and at the same time provide the broad academic experiences which constitute a liberal education. The curriculum of 132 semester units leads to the degree of bachelor of science in engineering.

Description of the Course of Study

The course of study embraces those fundamental subjects common to the undergraduate fields of engineering. Students have an opportunity to elect patterns of additional courses reflecting limited specialization in the specific fields of aeronautical, civil, electrical and electronic, industrial, and mechanical engineering. Emphasis is placed upon fundamentals, close integration of lecture and laboratory work, and application of engineering science to problems of practical nature. In contrast to this, the emphasis at the University of California is upon research and high level design.

In addition to the limited specializations in specific fields mentioned above, opportunities are afforded through course planning and counseling to elect a program combining engineering fundamentals with subjects in business administration emphasizing industrial management. This program also leads to the B.S. degree in engineering, and is intended to form the foundation for a fifth year leading to the M.S. degree in business administration. The student interested in this objective should consult both engineering and business administration advisers early in his program.

High School Preparation

It should be emphasized that the bachelor of science degree in engineering at this college is based upon expected qualification in mathematics and mechanical drawing, examinations in which are specifically required of engineering candidates in addition to the qualifying examinations taken by all applicants for admission to the college in freshman standing. The high school subjects which the student is expected to have completed in preparation for the engineering curriculum are listed in this catalog under Admission and Registration, High School Preparation.

ENGINEERING MAJOR

A major in engineering is offered with the B.S. degree. Courses in the major are in addition to 45 units in general education courses, except that nine units of chemistry, physics, and mathematics may be counted in general education. Specific requirements of the engineering program are outlined below. A minor is not required for the B.S. degree.

Lower Division Requirements

The program of study for the first two years is essentially the same for all engineering students. It is designed to give the student preparation in the fundamentals of mathematics and the basic sciences which, together with introductory engineering courses, will provide an adequate background for the rigorous upper division course sequences.

Lower Division Requirements: Mathematics 50, 51, 52; Chemistry 1A-1B; Physics 4A, 4B, 4C; Engineering A, 21, 50; and Engineering 22 and 23 (or 2 for civil engineering students). (45-47 units.)

Upper Division Requirements

The program of study for the last two years involves the study of the basic scientific principles developed in the first two years of the program as related to engineering problems and situations. This is supplemented by limited specialization in various fields of engineering in which practice as related to the particular field is emphasized. The student must complete (1) the upper division requirements for all students, (2) the requirements in the field of specialization, and (3) the restricted electives. The total of upper division engineering units is 49-51.

(1) Upper division requirements for all students: Engineering 102, 109, 116, 190, and 198 (16 units).

(2) Requirements in field of specialization: Students shall arrange core courses in the following manner, according to their field of interest (13-17 units):

Civil Engineering	Engineering 108, 113, 115
Electrical and Electronic Engineering	Engineering 100A, 100B, 101, 108, 115
Mechanical Engineering	Engineering 100A, 100B, 111A, 111B
Aeronautical Engineering	Engineering 111A, 111B, 113

(3) Restricted electives: In addition to the requirements in the field of specialization and the prerequisites for the various courses, the student shall complete a sequence of restricted electives related to the field of interest. This sequence must be approved by the Division of Engineering. An approved master plan must be filed with the division during the first semester of the junior year.

ENGINEERING MINOR

A minor in engineering is offered in arts and sciences. The minor consists of 15 to 22 units in engineering, nine units of which must be in courses carrying upper division credit. The courses should follow a logical sequence approved by the divisional representative.

THE MASTER'S DEGREE

The master of science degree with a major in mechanical engineering is offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

LOWER DIVISION COURSES

A. Introduction to Engineering (1) I, II

No prerequisite.

A survey of the fields of engineering, designed to familiarize the student with the nature, the requirements, the responsibilities, and the opportunities of the profession. Required of all freshman engineering students.

1. Engineering Drawing (2) I, II

Six hours of laboratory. No prerequisite.

The development of the skills and techniques of drawing for engineers. Freehand lettering and drawing, use and care of drafting equipment, elementary orthographic and pictorial drawing theory, basic symbolism of drafting, creative planning.

2. Plane Surveying (3) I, II

One lecture and six hours of laboratory.

Prerequisite: Mathematics 4 or equivalent.

Use, care, and adjustment of surveying equipment. Introduction to standard procedures, techniques of plane surveying, and plane table mapping.

3. Advanced Surveying (3) II

One lecture and six hours of laboratory.

Prerequisite: Engineering 2.

Advanced surveying computations and mapmaking; land, topographic, and city surveying. Elements of route surveying.

21. Descriptive Geometry (3) I, II
One lecture and six hours of laboratory.
Prerequisite: Mathematics 40 and Engineering 1, or qualification by examination.
Advanced engineering drawing theory and its application to the solution of engineering problems. Solution of point, line, and plane problems; curved lines, surfaces, and intersections.

22. Machine Drawing (2) I, II
Six hours of laboratory.
Prerequisites: Engineering 21 and Mathematics 50.
Standard drawing methods and procedures, detail and assembly drawing, elementary mechanisms; includes standard dimensioning practices, sections, gears, cams, linkages, and fasteners.

23. Manufacturing Processes (3) I, II
Two lectures and three hours of laboratory.
Prerequisite: Sophomore standing.
Analysis of the various tools and processes utilized in modern manufacturing and fabrication operations. Field trips are made to local manufacturing organizations.

50. Statics (3) I, II
Prerequisites: Physics 4A and Mathematics 51.
Engineering applications of the principles of static equilibrium of force systems acting on rigid bodies. Centroids and moments of inertia, introduction to fluid statics, and dry friction.

65A-65B. Industrial Practice (2-2) I, II
Prerequisite: Sophomore standing in Engineering. Selection based on personal interview following written application.
Supervised training in co-operating industrial organizations. First year of a three-year program providing the opportunity for selected students to correlate their formal college training with industrial experience at corresponding levels of responsibility and difficulty.

UPPER DIVISION COURSES

NOTE.—In laboratory courses special emphasis is placed upon the preparation of neat, concise, complete and intelligent reports.

100A. Electric Circuits (3) I, II
Prerequisite: Physics 4B.
Direct-current circuits, magnetic circuits, induced voltages, single-phase and polyphase alternating-current circuits, coupled circuits, the transformer and introduction to network analysis.

100B. Electrical Machinery (3) I, II
Two lectures and three hours of laboratory.
Prerequisite: Engineering 100A.
Theory of operation and the analysis of the characteristics of transformers, DC and AC motors and generators. Associated control devices.

101. Elements of Applied Electronics (3) I, II
Two lectures and three hours of laboratory.
Prerequisite: Engineering 100A.
Application of electron tubes, transistors in typical electronic circuits. Analysis of the operational characteristics of electron tubes and transistors. Emphasis on their utilization in engineering devices and systems.

102. Dynamics (3) I, II
Prerequisite: Engineering 50.
Engineering applications of fundamental kinematics and kinetics to problems involving translation, rotation, and plane motion of particles and rigid bodies. Work and energy, impulse and momentum, periodic motion.

108. Thermodynamics (4) I

Three lectures and three hours of laboratory.

Prerequisite: Physics 4C.

The basic principles of thermodynamics; application of the first and second laws to gas and vapor cycles. Not open to students whose major field of interest is mechanical or aeronautical engineering.

109. Physical Metallurgy (3) I, II

Two lectures and three hours of laboratory.

Prerequisite: Physics 4C.

Fundamentals of ferrous and nonferrous metallurgy in those aspects which affect physical qualities of metals. Effect of heat treatment, aging, and other processes on physical properties.

111A-111B. Thermodynamics and Fluid Flow (4-4) Year Course Beginning Semester I

Three lectures and three hours of laboratory.

Prerequisites: For Engineering 111A: Physics 4C; for Engineering 111B: Engineering 111A and credit or registration in Engineering 102.

First semester: Fundamental concepts of thermodynamics; the laws of thermodynamics and their application to power cycles; mechanics of ideal fluids; elements of heat transfer. Second semester: General thermodynamic equations; elements of combustion and gaseous equilibria; mechanics of compressible fluids and viscous flow; application to general problems in heat power.

113. Principles of Electrical Engineering (5) II

Four lectures and three hours of laboratory.

Prerequisite: Physics 4B.

The theory and characteristics of electrical and electronic equipment emphasizing industrial applications, operation, and control. Not open to students whose major field of interest is mechanical or electrical engineering.

115. Fluid Mechanics (4) I, II

Three lectures and three hours of laboratory.

Prerequisite: Engineering 102 and 108.

The statics and dynamics of incompressible and compressible fluids. Fluid measuring instruments, pipe flow, open channel flow, fluid machinery.

116. Resistance of Materials (4) I, II

Three lectures and three hours of laboratory.

Prerequisites: Engineering 50 and credit or registration in Engineering 109.

Elastic and plastic properties and strength of engineering materials. Analysis of types of failures, stress analysis and deformation of simple structural and machine members. Laboratory testing procedures and experimental confirmation of elastic and plastic theory.

120A. Structural Analysis I (3) II

Prerequisite: Engineering 116.

Stresses in beams, trusses, frames, graphical methods, influence lines; moving loads; introduction to statically indeterminate structures and moment distribution.

120B. Structural Analysis II (3) I

Prerequisite: Engineering 120A.

Various analytical and graphical methods applied to determination of stresses in statically indeterminate structures.

121. Reinforced Concrete (3) I

Prerequisite: Engineering 120A.

Properties and characteristics of reinforced concrete; design of structural components. Introduction to plastic theory and limit design.

122. Soil Mechanics and Foundation Engineering (3) I

Two lectures and three hours of laboratory.

Prerequisite: Engineering 116.

Properties of soils as structural and foundation materials. Sampling and testing techniques.

123. Applied Hydraulics (3) I
Prerequisite: Engineering 115.
Application of principles of fluid mechanics in the fields of water supply engineering, drainage practice, and basic sanitary engineering.

124. Advanced Theory of Structures (3) II
Prerequisite: Engineering 120B or 151B.
Application of numerical methods of analysis to structural problems; further treatment of energy methods with applications to beams, frames, and rings; introduction to plastic methods of analysis.

125. Sanitary Engineering (3) II
Prerequisite: Engineering 123.
A study of water treatment plants, water distribution systems, sewage collection systems, and sewage disposal facilities; introduction to industrial and radioactive waste disposal; stream sanitation.

126. Optical Tooling (3) I
One lecture and six hours of laboratory.
Prerequisite: Engineering 2 or consent of the instructor.
Fundamentals of precise measurement by optical methods. Application of precise surveying techniques to industrial use. Introduction to use and application of optical micrometer, optical square, alignment telescope.

127. Transportation Engineering (3) I
Prerequisites: Engineering 3 and senior standing.
Transportation engineering as related to problems in highway and airport engineering; planning, design, and construction of municipal street layout elements; traffic engineering.

130. Network Analysis (3) II
Prerequisite: Engineering 100A.
Analysis of complex direct-current, single-phase and polyphase alternating-current circuits occurring in typical control systems and power systems. Theory of symmetrical components.

131. Electromechanical Control Devices (3) I
Two lectures and three hours of laboratory.
Prerequisite: Credit or registration in Engineering 101.
Application of amplidynes, thymatrols, rototrols, synchros, and selsyns in servosystems and other devices.

132. Transient Analysis of Control Systems (3) II
Prerequisies: Engineering 130 and Mathematics 118A.
The analysis of typical speed, torque, voltage, and current control systems with sinusoidal and step-function inputs.

133. Power System Analysis (3) I
Prerequisite: Engineering 100B.
Comprehensive analysis of power systems. Further study of a-c machinery including symmetrical components. Electrical, mechanical, and economic factors in transmission and distribution of electrical energy. Performance of generating and transmission equipment under normal and short-circuit conditions.

134. Engineering Electronics (3) I
Prerequisites: Mathematics 118A and Engineering 130.
Analysis of the electronic circuits of modern industrial control systems.

135. Advanced Electrical Machinery (3) I
Two lectures and three hours of laboratory.
Prerequisite: Engineering 100B.
Advanced analysis and application of electrical machinery. Emphasis upon synchronous equipment and special purpose machines. Related control equipment.

136. Electronic Instrumentation (2) I
Prerequisite: Engineering 101.
Application of electronics to the instrumentation of mechanical, hydraulic and electrical devices. Indicating and recording instruments.

140. Principles of Heat Transfer (3) I
Prerequisite: Engineering 108 or 111A.
Modes of heat transfer; principles of steady state conduction, radiation, and convection; introduction to heat transfer by evaporation and condensation; application of the principles of heat transfer.

141. Internal Combustion Engines (4) I
Three lectures and three hours of laboratory.
Prerequisite: Engineering 111B.
Analysis of idealized and real internal combustion engine cycles; combustion problems; performance of reciprocating and rotary types of internal combustion engines. Principles of reaction motors.

142. Fuels and Combustion (3) I, II
Prerequisites: Engineering 111B and Chemistry 1B.
Types of fuels; stoichiometric and thermochemical analysis of combustion. Process of combustion. Physical properties of fuels. Applications to combustions in engines and furnaces.

143. Gas Dynamics (3) II
Prerequisite: Engineering 111B.
Thermodynamics of high velocity compressible fluid flow. Shock regions; adiabatic and diabatic flow. Applications to the propulsive duct and discharge nozzles.

145. Mechanics of Machinery (3) II
Prerequisite: Engineering 102.
An extension of the principles of statics and dynamics to mechanisms. Analysis of velocity and acceleration of machine elements and the determination of static and dynamic forces in machines. Theory of vibration analysis and vibration isolation.

146. Elements of Machine Design (3) I
Two lectures and three hours of laboratory.
Prerequisites: Engineering 116 and 145.
Application of mechanics, physical properties of materials, and manufacturing processes to the design of machine elements. Synthesis of simple mechanisms.

147. Introduction to Vibration Analysis (3) I
Prerequisites: Engineering 102 and Mathematics 52.
Analysis of mechanical vibration; single-and multi-degree of freedom systems; free and forced vibrations; vibration isolation; vibration absorbers. Theory of vibration measuring instruments.

150A. Subsonic Aerodynamics (3) II
Prerequisites: Engineering 102 and credit or registration in Mathematics 118A and Engineering 111B.
Fluid flow, airfoil and wing theory, drag, propeller theory, aircraft and engine performance, maneuvers.

150B. Supersonic Aerodynamics (3) I
Prerequisites: Engineering 150A and concurrent registration in Engineering 151B.
High-speed aerodynamics, introduction to problems in aero-elasticity.

151A. Aircraft Structures I (3) II
Prerequisites: Engineering 102 and 116 and concurrent registration in Engineering 150A.
Equilibrium of forces, space structures, semimonocoque structures, air-load distribution.

151B. Aircraft Structures II (3) I
Prerequisites: Engineering 151A and concurrent registration in Engineering 150B.
Mechanical properties of aircraft materials, design of aircraft structural components, special methods of analysis.

152. Aircraft Propulsion Systems (3) I
Prerequisite: Engineering 111B.
Theory and performance characteristics of aircraft propulsion systems including reciprocating engines, turbo-jets, ram-jets, etc.

165A-165B-165C-165D. Industrial Practice (2-2-2-2) I, II
Prerequisites: Engineering 65A and 65B.
Supervised training in cooperative industrial organizations. Second and third years of a three-year program providing the opportunity for selected students to correlate their formal training with industrial experience at corresponding levels of responsibility and difficulty.

166. Honors Course (Credit to be arranged) I, II
Refer to the Honors Program.

173. Production Planning and Control (3) I, II
(Same course as Business Administration 135)
Prerequisite: Business Administration 134.
Forecasting and estimating; authorization to manufacture; order, flow, block and load control; continuous versus intermittent production; use of drawings; tabulation of data; coordination of production with other factory departments. Not open to students with credit for Business Administration 135.

176. Motion and Time Study (3) I, II
(Same course as Business Administration 136)
Prerequisite: Business Administration 134.
Work simplification through methods improvement; operations analysis; flow charts; calculation of time standards, work and speed analysis; new developments in job timing and motion economy study; time reduction curves; work standards. Not open to students with credit for Business Administration 136.

177. Quality Control (3) I
(Same course as Business Administration 139 or Mathematics 177)
Prerequisites: Business Administration 134 and either Economics 140 or Mathematics 12.
Statistical techniques; tolerances and variants; standards; organization for inspection; inspection methods for raw materials, work in process, and finished products; control of inspection devices. Not open to students with credit for Business Administration 139 or Mathematics 177.

E-179. Manufacturing and Tooling Administration (3) Extension
(Same course as Business Administration E-142)
Prerequisite: Engineering 173 or Business Administration 135; or consent of the instructor.
Production breakdown and relationship to manufacturing plan and tooling policy; planning, processing, and control required to activate program into production. Relationship of design engineering, tool project engineering, and tool manufacturing to production. Not open to students with credit for Business Administration E-142.

180. Principles of Engineering Economy (3) I
Prerequisite: Senior standing.
Analysis of the costs of development and promotion, construction, operation, depreciation and depletion. Capital recovery, income, return and yield. Valuations and appraisals, cost analysis and financial analysis. Application to engineering problems.

185. Air Conditioning and Refrigeration (3) I
Two lectures and three hours of laboratory.
Prerequisite: Engineering 108 or 111A.
Applications of thermodynamics and fluid mechanics to problems in air conditioning and refrigeration involved in several fields of engineering.

186. Advanced Resistance of Materials (3) II
Prerequisites: Engineering 102 and 116.
Advanced topics in resistance of materials including combined stresses, buckling, and failure theories. Introduction to elastic stability and instability.

187. Methods of Analysis (3) II
Two lectures and three hours of laboratory.
Prerequisite: Senior standing.
Solutions of advanced engineering problems in fluids, thermodynamics and electricity utilizing the methods of analogs, dimensional analysis and the theory of models.

190A. Engineering Applications (Civil Engineering Field) (4) II
One lecture and nine hours of laboratory.
Prerequisites: Engineering 121, 122, and 123.
Fundamental engineering science applied to the solution of a civil engineering project.

190B. Engineering Applications (Civil Engineering Field) (4) II
One lecture and nine hours of laboratory.
Prerequisites: Engineering 121, 122, and 123.
Fundamental engineering science applied to the solution of a civil engineering construction project.

190C. Engineering Applications (Electrical Engineering Field) (4) II
Three lectures and three hours of laboratory.
Prerequisites: Engineering 131 and 134.
Advanced engineering electronics including the synthesis of electrical control systems involving electronic and electro-mechanical devices.

190D. Engineering Applications (Electrical Engineering Field) (4) II
Three lectures and three hours of laboratory.
Prerequisites: Engineering 133 and 135.
Advanced analysis of power systems with emphasis on system stability under short-circuit conditions. Protective devices and metering.

190E. Engineering Applications (Mechanical Engineering Field) (4) II
Three lectures and three hours of laboratory.
Prerequisites: Engineering 111B and credit or registration in Engineering 140.
Applications of fundamental engineering science to heat-power machinery such as internal combustion engines and steam-power equipment, air-conditioning and refrigeration machinery, and air compressors.

190F. Engineering Applications (Mechanical Engineering Field) (4) II
Three lectures and three hours of laboratory.
Prerequisite: Engineering 146.
Applications of fundamental engineering principles to the practical design of machinery. Considerations of materials properties, stress analysis, mechanisms, kinematics, economics, production, and appearance are taken up as needed. Practical design methods utilizing empirical techniques are emphasized and explained in the individual design of a simple machine.

190G. Engineering Applications (Aeronautical Engineering Field) (4) II
Three lectures and three hours of laboratory.
Prerequisites: Engineering 150B, 151 B, 152.
Fundamental engineering principles applied to the analysis and design of aircraft controls systems. Control surface theory, stability (static and dynamic) and control, operational methods of solving problems, stability criteria, root locus method, artificial stabilization, preliminary design of an aircraft.

190H. Engineering Applications (Aeronautical Engineering Field) (4) II
Three lectures and three hours of laboratory.
Prerequisites: Engineering 151B and 152.
Applications of engineering principles to a comprehensive problem in the structural analysis and design of an aircraft.

196. Advanced Engineering Topics (2 or 3) I, II
Prerequisite: Consent of instructor.
Analysis of modern developments in engineering. May be repeated with the approval of the instructor for a total of six units.

198. Senior Report (2) I, II
Prerequisite: Senior standing.
Investigation of specific problems of advanced nature. Preparation of technical papers and of typical information, research, and scientific reports. Oral and written presentations. May be repeated to a maximum of six units.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of instructor.

GRADUATE COURSES

297. Problem Analysis (3) I, II
Prerequisite: Consent of graduate adviser.

Review of methods for investigation and reporting of data. Consideration of problems in preparation of project or thesis.

298. Special Study (1-3) I, II
Individual study. Three units maximum credit.

Prerequisite: Consent of staff; to be arranged with division chairman and instructor.

299. Thesis or Project (3) I, II
Prerequisites: An officially appointed thesis committee and advancement to candidacy.

Guidance in the preparation of a project or thesis for the master's degree.

MECHANICAL ENGINEERING
IN THE DIVISION OF ENGINEERING

Graduate Courses

200. Seminar in Mechanical Engineering (2 or 3) I, II
Prerequisite: Consent of the graduate adviser and instructor.

An intensive study in one of the following fields of engineering:
A. Thermodynamics and fluid flow;
B. Mechanics;
C. Engineering materials;
D. Engineering systems;
E. Operations research in engineering;
F. Nuclear engineering.

210. Thermodynamics (3)
Prerequisites: Engineering 111B and credit or concurrent registration in Mathematics 118B.

A rigorous study of the laws of thermodynamics. Introduction to and application of kinetic theory and chemical thermodynamics. Thermodynamic relations for pure substances and development of pressure-volume-temperature relations. Binary mixtures. Criteria of equilibrium. Chemical equilibrium and chemical potential.

211. Heat Transfer (3)
Prerequisites: Engineering 140 and Mathematics 118B.

Two and three dimensional conduction; steady and unsteady state, heat transfer at high velocities, introduction to mass transfer.

212. Gas Dynamics (3)
Prerequisites: Engineering 143 and Mathematics 118B.

Further considerations of the flow of compressible fluids in conduits. Shock fronts, unsteady flow and real gases.

213. Aircraft and Missile Propulsion (3)
Prerequisites: Engineering 142, 143 and Mathematics 118B.

Analysis of ideal gas turbine cycles. Principles of regeneration, reheat and intercooling. Thermodynamic analysis and performance of turbojet engines, ramjet engines, and rocket motors. Rocket jet propellant systems. Dynamics of rocket propulsion free of gravity and air resistance.

220. Vibration Analysis (3)
Prerequisites: Engineering 147 and credit or concurrent registration in Mathematics 118B.

Analysis of linear and nonlinear systems; of lumped and distributed systems; of multidegree of freedom systems. Transients. Self-excited vibrations.

221. Stress Analysis (3)
Prerequisites: Engineering 186 and Mathematics 118B.

Topics in applied elasticity, advanced study of the resistance of materials and experimental stress analysis. Failure theories energy methods, limit design, theory of plates and shells. Photoelasticity, brittle lacquers, strain gages, and analogs in determining static, dynamic and residual stress distributions.

222. Dynamics of Machinery (3)
Prerequisites: Engineering 146 and credit or concurrent registration in Mathematics 118B.

Mathematical analysis of motion, stresses and deflections as applied to the design of machines. Dynamics of constrained systems; stability and system control. Application to systems involving mechanical, electrical and fluid links.

223. Theory of Elasticity and Plasticity (3)
Prerequisites: Engineering 186 and Mathematics 118B.

Introduction to theory of elasticity. Plane solutions. Stress and strain at a point. Energy methods and elastic stability. Mechanics of the plastic state. Yield criteria and stress-strain relation in the plastic state. Solutions for plastic deformation and residual stresses in bars, beams and tubes.

ENGLISH

IN THE DIVISION OF HUMANITIES

Professors: Adams, J. R.; Block; Burnett; Gulick; Haskell (Chairman); Johnson, F. L.; Keeney; Kennedy; Marchand; Phillips, G. L.; Shouse; Theobald; Tidwell; Trail
Associate Professors: Sanderlin; Tozer
Assistant Professors: Baker, J. S.; Frey; Gerlach; Monteverde; Perkins; Sandstrom; Wanlass; Widmer
Lecturers: Black; Loomis

A major and minor in English are offered with the A.B. degree in *arts and sciences*. Teaching majors in English are offered in *teacher education* for the junior high school and general secondary credentials; teaching minors in English are offered for the general elementary, kindergarten-primary, and general secondary credentials.

Courses in the English major are in addition to 45 units in general education courses. Students majoring in English are not required to complete a minor for the A.B. degree. Students who plan to take the general secondary credential with a major in English are advised to include in the undergraduate program a teaching minor for the credential.

A reading knowledge of one foreign language, preferably French or German, is required of English majors for the A.B. degree (except junior high school credential students).

MAJOR IN ARTS AND SCIENCES

Lower division: 12 units in English, in addition to English 1, at least six units to be in a year course.

Upper division: 24 upper division units in English and comparative literature, selected with the approval of the deparmental adviser.

Foreign Language: 12 units of a foreign language or equivalent knowledge demonstrated by a test of reading knowledge (administered by the Department of Foreign Languages, in consultation with the English Department) is required. Selection of French or German is strongly recommended.

Selection of Courses

Prospective majors of sophomore standing may, with the consent of the course instructor and subject to general college regulations (see Credit for Upper Division and Graduate Courses in the section of the catalog on Announcement of Courses and Programs of Study), substitute six units of upper division electives for six units of lower division work, such upper division units to be selected from the following: English 101A, 101B, 116A, 116B, 118A, 118B, 119A, 119B, 126A, 126B, 143A, 143B.

Students of junior or senior standing may substitute for any deficiencies in lower division requirements in English (except English 1) an equivalent number of units of upper division courses selected from the following: English 101A, 101B, 116A, 116B, 118A, 118B, 119A, 119B, 120A, 120B, 126A, 126B, 143A, 143B, 151.

MINOR IN ARTS AND SCIENCES

A minor in English is offered in *arts and sciences.* The minor consists of 15 to 22 units in English, nine units of which must be in courses carrying upper division credit.

ENGLISH MAJORS IN TEACHER EDUCATION

General Secondary Credential

Major for the General Secondary Credential. A teaching major in English is offered for the general secondary credential. This major may be used for the A.B. degree, subject to the foreign language requirement.

Lower Division: 12 units in English, in addition to English 1, at least six units to be in a year course.

Upper Division: 24 upper division units to include the following courses: English 191 and 192; three units from English 117A or 117B; six units from English 131, 132, 133, and 134; six units from one of the following groups: (a) English 119A, 119B, 126A, 126B, 143B, (b) English 118A, 118B, 143A, (c) English 120A and 151; and three units of upper division electives in English. Recommended electives: Education 122, Journalism 152, and Speech Arts 108.

Additional Credential Requirements

Requirements for the general secondary credential include completion of a bachelor's degree, the teaching major in English, a teaching minor for the credential, and the credential requirements in a postgraduate year, to include two courses selected from the following: English 291, 292, 293, 294. In exceptional cases, two units of English 298, or three units of English 191 or 192 may be substituted for one seminar with the consent of the departmental representative. Refer to the section of the catalog on Professional Curricula in Teacher Education for a description of requirements in the postgraduate year.

Junior High School Credential

Major for the Junior High School Credential. A teaching major in English is offered with the A.B. degree and junior high school credential to students with teaching minors in home economics or industrial arts. Students taking this credential must complete the teaching major and minor and additional requirements in professional education courses.

It is recommended that this credential be taken in combination with the general elementary or special secondary credential. For a description of this program, refer to Combination of Credentials in the section of the catalog on Professional Curricula in Teacher Education. Students wishing to secure the junior high school credential under conditions other than those described above should consult with the Coordinator of Secondary Education.

Requirements in the Major. 24 units in English or comparative literature, in addition to English 1, at least 18 units to be in courses carrying upper division credit, including three units in American literature and three units in Shakespeare. Recommended as part of the major: English 192.

Professional Courses in Teacher Education. 24 upper division units to include Education 100, 110, 120, 121 (methods in the major and minor fields), 180, and Health Education 151.

For additional information on this credential, refer to the Junior High School Credential in the section of the catalog on Professional Curricula in Teacher Education.

ENGLISH MINORS IN TEACHER EDUCATION

General Secondary Credential

Minor for the General Secondary Credential. A teaching minor in English is offered for the general secondary credential. This minor, which may be used for the A.B. degree, consists of a minimum of 21 units to include the following courses: Lower division: English 1 and a year course chosen from English 50A-50B, 52A-52B, 56A-56B, or 60A-60B (9 units). Upper division: 12 units to include one course from each of the following areas: Nineteenth Century English Literature, selected from English 119A, 119B, 126A, 126B, or 143B; Shakespeare, selected from English 117A or 117B; American Literature, selected from English 131, 132, 133, or 134; and Language, English 192.

General Elementary and Kindergarten-Primary Credentials

Minor for the General Elementary and Kindergarten-Primary Credentials. A minor in English is offered for the general elementary or kindergarten-primary credential. The minor consists of a minimum of 15 units, to include three units in American literature. Six units in the minor must be in courses carrying upper division credit.

THE MASTER'S DEGREE

The master of arts degree with a major in English and the master of arts degree for teaching service with a concentration in English are offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

COMPARATIVE LITERATURE

For courses in world literature, see comparative literature; these courses give credit toward the English major or minor or toward the minor in comparative literature.

CREDIT IN COURSE SEQUENCES

All elective year courses in the English Department may be begun in either semester, and either semester may be taken singly for credit.

Prerequisites

English 1 is a prerequisite for all English courses except English 2.

LOWER DIVISION COURSES

R. Reading Laboratory (0) I, II
A semitutorial service offered by the English Department to those wishing to improve reading ability, or secure individual help with study problems. Open to all students at any level of college work.

W. Writing Laboratory (0) I, II
A semitutorial service offered by the English Department to those wishing assistance in writing projects, either remedial or advanced. Open to students at any level of college work.

***1. Freshman Composition (3) I, II**
Study and practice in the expression of ideas and factual materials; principles of organization and of effective style, with emphasis on exposition. A required general education course in written communication. English 1 is a prerequisite for all English courses except English 2.

***1-X. English for International Students (3) I**
A first course in English grammar and composition. To be taken by international or bilingual students as a substitute for English 1. Students are assigned to this course upon the recommendation of the faculty adviser and the student's performance on the English examination for foreign students. As a substitute for English 1, this course will meet the general education requirement for written communication.

***2. Freshman Literature (3) I, II**
Training in reading literary materials with insight and vividness. A general education course in literature, philosophy, and the arts.

***10. Individual Reading (1) I, II**
Development of personal tastes for leisure-time reading through lectures and written reports. May be taken a second time with new materials. A general education course in literature, philosophy, and the arts.

20. Latin and Greek Word Derivation (3) I, II
(Same course as General Language 20)
A general and elementary course in philology. Study of Latin and Greek roots of most frequent occurrence in English, and of the English words derived from them. No prerequisite. Not open to students with credit for General Language 20.

***50A-50B. Masterpieces of American Literature (3-3) Year Course Beginning Either Semester**
Semester I: Major American writers from the beginning to 1860. Semester II: American literature from 1860 to the present. A general education course in literature, philosophy, and the arts.

***52A-52B. Masterpieces of World Literature (3-3) Year Course Beginning Either Semester**
(Same course as Comparative Literature 52A-52B)
A chronological survey from Homer to modern times. The first semester stresses the classical epic and tragedy. The second semester stresses more recent literature, including prose fiction, the drama, and the essay. A general education course in literature, philosophy, and the arts. Not open to students with credit for Comparative Literature 52A-52B.

***56A-56B. Survey of English Literature (3-3) Year Course Beginning Semester I**
Prerequisite: English 2 or consent of instructor.
The study of some important works of English literature from the Anglo-Saxon period through the Victorian age, with emphasis upon the literary history of each period. A general education course in literature, philosophy, and the arts.

***60A-60B. Literature and Personality (3-3) Year Course Beginning Semester I**
The close study of a limited number of the great creators of literature. The goal of the course is to derive, from markedly different specific works, orderly and generalized methods for the interpretation of great literature. A general education course in literature, philosophy, and the arts.

***61. Sophomore Composition (3) I, II**
Practical writing beyond the freshman level. Prerequisite: English 1 or equivalent. A general education course in written communication.

***62. Directed Writing (3) I, II**
Guidance and extensive practice in effective creative writing, particularly description and narration. A general education course in written communication.

UPPER DIVISION COURSES

100. English Fundamentals (0) I, II
Review of spelling, punctuation, grammar, and usage; exercises in vocabulary building and in fundamental reading skills; theme writing. Three meetings a week with additional optional work in the Reading and Writing Laboratory.

***101A-101B. Modern Continental Fiction (3-3) Year Course Beginning Semester I**
(Same course as Comparative Literature 101A-101B)
Selected works by modern novelists and short story writers of continental Europe. First semester, the late nineteenth century; second semester, the twentieth century. A general education course in literature, philosophy, and the arts.

***106. Creative Writing (3) I**
A writing workshop in which the students are given opportunity to criticize each other's work. Emphasis on narrative and description, but freedom to pursue whatever writing forms may interest the student most. May be taken a second time with new material. A general education course in written communication.

***110. Individual Reading (1) I, II**
An advanced course in the reading of modern drama, poetry and fiction. A general education course in literature, philosophy, and the arts.

113. American English (3) I
The development of American English; regional and cultural differences in pronunciation, grammar, and vocabulary.

***115. The Bible as Literature (3) I**
(Same course as Comparative Literature 115)
A study of the narrative, poetry, and prophecy of the King James version of the Bible. Readings, reports, lectures, and discussions. A general education course in literature, philosophy, and the arts. Not open to students with credit for Comparative Literature 115.

116A-116B. The Age of Elizabeth (3-3) Year Course Beginning Semester I
Semester I: Poetry and prose, exclusive of drama. Semester II: The drama to 1642, excluding Shakespeare.

***117A-117B. Shakespeare (3-3) Year Course Beginning Semester I**
The first semester gives special emphasis to the histories and comedies; the second, to tragedy and the dramatic romances. A general education course in literature, philosophy, and the arts.

***118A-118B. Eighteenth Century English Literature (3-3)**
Year Course Beginning Semester I
The first semester emphasizes the social satire of Swift, Pope, Addison, Steele, Dryden, Gay, Prior; and also the first stirrings of the romantic revolt in a number of important poems and prose works. The second semester is devoted to Johnson and Boswell and their circle and to a significant romantic literature antedating the romantic outbust.

***119A. English Romantic Poetry (3) I**
The culmination of the romantic movement in the poetry of Wordsworth, Coleridge, Byron, Shelley, and Keats, in relation to the thought of the revolutionary period. A general education course in literature, philosophy, and the arts.

***119B. Victorian Poetry (3) II**
Tennyson and Browning with their contemporaries and successors, relating English poetry to Nineteenth Century life and thought. A general education course in literature, philosophy, and the arts.

120A. The Seventeenth Century: Milton (3) II (Alternate years)
The poetry and major prose works of Milton, with stress on the development of his art and mind; the political and religious background and the events in which Milton participated.

120B. The Seventeenth Century: Metaphysical and Cavalier Poets (3) II
(Alternate years)
The Metaphysical and Cavalier poets in relation to the cultural and literary backgrounds of the sixteenth, seventeenth, and eighteenth centuries.

126A. Romantic and Victorian Prose (3) I
Romantic and mid-Victorian prose writers, including Coleridge, Hazlitt, Lamb, DeQuincey, Carlyle, Landor, Macaulay, and Mill, related to the literary, political, and social movements of the period.

***126B. Late Nineteenth Century British Prose (3) II**
The essays of Arnold, Thomas Huxley, Newman, Pater, Ruskin, and Stevenson. Study of scientific, aesthetic, and ethical backgrounds. A general education course in literature, philosophy, and the arts.

***129. Contemporary British Literature (3) I, II**
Selected prose and poetry of England and Ireland in the present century, especially after World War I: Yeats, Joyce, Eliot, D. H. Lawrence, Virginia Woolf and some representative modern novelists, the Oxford poets, Dylan Thomas and current movements. A general education course in literature, philosophy, and the arts.

***131. American Literature: 1820-1860 (3) I**
The study of the important romantic writers, with emphasis on the New England group. A general education course in literature, philosophy, and the arts.

***132. The Frontier and American Literature (3) I, II**
The influence of the frontier upon American literature, studied through various regions and movements. Examinations of source materials, biographies, and representative writers. A general education course in literature, philosophy, and the arts.

***133. American Literature: 1860-1910 (3) II**
The rise of realism in American literature. Influences, foreign and native, which promoted the movement. Definition of realism. The literary creed of the realists. The romantic attack and the realist defense. A general education course in literature, philosophy, and the arts.

***134. American Literature: 1910 to the Present (3) I, II**
Ideas and forms in representative poetry and prose. A general education course in literature, philosophy, and the arts.

143A-143B. The English Novel (3-3) Year Course Beginning Semester I
The history of the English novel from its beginnings to the present century. Emphasis in the first semester will be on the Eighteenth Century and in the second semester on the Nineteenth Century.

***149. The Study of Poetry (3) I, II**
A course proceeding from simpler to more complex poetic productions. Emphasis on current direction in poetry, and on problems of form. The inclination to write poetry is encouraged. A general education course in literature, philosophy, and the arts.

151. Chaucer (3) I
A study of Chaucer's works, with emphasis on "The Canterbury Tales" and "Troilus and Criseyde."

***152A-152B. World Drama (3-3) Year Course Beginning Semester I**
(Same course as Comparative Literature 152A-152B)
Study of selected tragedies and comedies from Asiatic, European, English, and American literature, with emphasis upon the human problems depicted therein and upon the timelessness of certain themes, such as those of Electra and Medea. Lectures, discussions, and reports on readings. A general education course in literature, philosophy, and the arts. Not open to students with credit for Comparative Literature 152A-152B.

162. The Writing of Fiction (3) II
Prerequisite: Consent of instructor.
Constructing and writing short stories for publication.

166. Honors Course (Credit to be arranged) I, II
Refer to the Honors Program.

189. Studies in American Folklore (3) I
American folk songs, tales, legends, superstitions, proverbs, and speech, with particular emphasis on one of these.

191. Advanced Composition (3) II
A course designed for prospective teachers of English. This is not a methods course, but a content course in grammar, composition, and journalism. Required of all teaching majors in English; open to other students as an elective.

192. The English Language (3) I, II
Prerequisite: Open only to seniors and graduate students.
The study of the history of the English language, of its words and structure, of the changes in inflections, pronunciation, vocabulary, and meaning, and of its use as an instrument of communication and human living.

193. Old English (3) I
Prerequisite: Open only to seniors and graduate students.
Elementary grammar and readings in Old English prose and poetry; introduction to *Beowulf*.

195. Literary Criticism (3) II
Prerequisite: Open only to seniors and graduate students.
A historical survey of the principles and practices of literary criticism from Greek times to the Nineteenth Century. Readings in the works of Aristotle, Horace, Longinus, Sidney, Boileau, Dryden, Lessing, Sainte-Beuve, Coleridge, and Arnold.

198. Comprehensive Reading and Survey (3) II
Prerequisite: Open only to students with nine upper division units in English.
A study of major movements in English literature through a review of important writers and key works. Individual programs of readings to fill the needs of each student.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of instructor.

GRADUATE COURSES

260. Problems of Literary Creation (2-6) II
Prerequisites: Consent of instructor and departmental adviser.
Criticism and coaching in the larger forms.

290. Bibliography (2) II
Exercises in the use of basic reference books, journals, and specialized bibliographies, preparatory to the writing of a master's project or thesis.

291. Seminar: A Major Author (3) I, II
Prerequisite: 12 units of upper division work in English.
The critical study of a major author, such as Shakespeare, Dickens, Mark Twain. May be repeated with new content for additional credit.

292. Seminar: A Cultural Period (3) I
Prerequisite: 12 units of upper division work in English.
The study, through its literature, of a cultural period such as the Renaissance, the Enlightenment, the Romantic Revolution, or the like. May be repeated with new content for additional credit.

293. Seminar: A Literary Problem (3) II
Prerequisite: 12 units of upper division work in English.
The study of a literary problem, such as Regionalism in America, or European influences on American Literature, or the like. May be repeated with new content for additional credit.

294. Seminar: A Literary Type (3) I
Prerequisite: 12 units of upper division work in English.
The study of a literary type, such as the Personal Essay, Epic, Tragedy, and the like. May be repeated with new content for additional credit.

298. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of staff; to be arranged with department chairman and instructor.

299. Thesis (3)
Prerequisites: An officially appointed thesis committee and advancement to candidacy.
Guidance in the preparation of a project or thesis for the master's degree.

FRENCH

IN THE DIVISION OF HUMANITIES

Professors: Brown, E. M. (Chairman Foreign Languages Department); Messier
Assistant Professor: Piffard

Majors and minors in French are offered in *arts and sciences* and in *teacher education*. Courses for the major in arts and sciences and for the teaching major for the general secondary credential in teacher education are in addition to 45 units in general education, except that six units in elementary German or Spanish may be counted in general education. A minor to be approved by the departmental adviser is required of students using these majors for the bachelor's degree. Students who plan to take the general secondary credential are advised to complete a teaching minor for the credential in the undergraduate program.

A teaching major in foreign languages (French) is also offered with the A.B. degree and junior high school credential. Courses for this major are in addition to 45 units in general education. A student with this major is required to complete a minor in industrial arts or in home economics.

MAJOR IN ARTS AND SCIENCES

Lower Division. French 1, 2, 3, 4 (or equivalents), 5, 6; and German 1 and 2, or Spanish 1 and 2, or Latin 1 and 2 (or equivalents). Recommended: History 4A-4B.

Each year course in high school foreign language may be counted as the equivalent of three semester units of pattern credit in college. Year courses in foreign languages completed in high school may not be repeated in college for credit, except that the last year course in the foreign language sequence may be repeated in college for graduation credit, not to exceed a total of three units of repeated work.

Upper Division. 24 upper division units, at least 21 units of which must be in French, including French 198. With the approval of the departmental adviser the remaining three units may be selected from the following courses: French 140, 141; Geography 125; History 121A-121B, 131A-131B, 141, 142, 143A-143B, 144A-144B; or Comparative Literature 101A, 140A-140B, 152A-152B.

MINOR IN ARTS AND SCIENCES

A minor in French is offered in *arts and sciences.* The minor consists of 15 to 22 units in French (exclusive of course equivalents), six units of which must be in courses carrying upper division credit.

MAJORS IN TEACHER EDUCATION

General Secondary Credential

Major for the General Secondary Credential. A teaching major in French is offered for the general secondary credential. This major, which may be used for the A.B. degree, is the same as the major in arts and sciences, except that French 101A-101B must be included in the major. By date of credential candidacy, the student must have completed at least 36 units in French, exclusive of course equivalents. Before taking a directed teaching assignment in the language (Education 180 or 316A), the candidate for the credential must pass a proficiency examination, administered by the Department of Foreign Lauguages, in the language and its area civilization. (French 40-41, or 140-141, prepare for this latter examination in the area civilization).

Additional Credential Requirements

Requirements for the general secondary credential include completion of a bachelor's degree, the teaching major in French, a teaching minor for the credential, and the credential requirements in a postgraduate year, to include French 214 and 220 (4 units).

Refer to the section of the catalog on Professional Curricula in Teacher Education for a description of requirements in the postgraduate year.

Junior High School Credential

Major for the Junior High School Credential. A teaching major in foreign languages (French) is offered with the A.B. degree and junior high school credential to students with teaching minors in home economics or industrial arts. Students taking this credential must complete the teaching major and minor and additional requirements in professional education courses. Before taking a directed teaching assignment in the language (Education 180), the candidate for the credential must pass a proficiency examination, administered by the Department of Foreign Languages, in the language and in its area civilization. (French 40-41, or 140-141, prepare for this latter examination in the area civilization.)

It is recommended that this credential be taken in combination with the general elementary or special secondary credential. For a description of this program, refer to Combination of Credentials in the section of the catalog on Professional Curricula in Teacher Education. Students wishing to secure the junior high school credential under conditions other than those described above should consult with the Coordinator of Secondary Education.

Requirements in the Major. 24 units in one or more foreign languages (French, German or Spanish), to include 18 units in courses carrying upper division credit.

Professional Courses in Teacher Education. 24 upper division units to include Education 100, 110, 120, 180, 121 (methods in the major and minor fields), and Health Education 151.

For additional information on this credential, refer to the Junior High School Credential in the section of the catalog on Professional Curricula in Teacher Education.

MINORS IN TEACHER EDUCATION

General Secondary Credential

Minor for the General Secondary Credential. A teaching minor in French is offered for the general secondary credential. This minor, which may be used for the A.B. degree, consists of a minimum of 21 units (exclusive of course equivalents) to include the following courses: French 1, 2, 3, 4, 5, 6; and French 101A-101B. Before taking a directed teaching assignment in the language (Education 180 or 316A), the candidate for the credential must pass a proficiency examination, administered by the Department of Foreign Lauguages, in the language and its area civilization. (French 40-41 or 140-141 prepare for this latter examination in the area civilization.)

General Elementary and Kindergarten-Primary Credentials

Minor for the General Elementary and Kindergarten-Primary Credentials. A minor in foreign languages is offered for the general elementary or kindergarten-primary credential. This minor consists of a minimum of 15 units in one or more foreign languages (French, German, Spanish), six units of which must be in courses carrying upper division credit.

THE MASTER'S DEGREE

The master of arts degree for teaching service in foreign language with a concentration in French is offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

LOWER DIVISION COURSES

***1. Elementary (3) I, II**
Three lectures and one hour of laboratory.
Pronunciation, oral practice, readings on French culture and civilization, minimum essentials of grammar A general education course in foreign language.

***2. Elementary (3) I, II**
Three lectures and one hour of laboratory.
Prerequisite: French 1 or one year of high school French.
Continuation of French 1. A general education course in foreign language.

***3. Intermediate (3) I**
Prerequisite: French 2 or two years of high school French.
Reading in French of cultural material, short stories, novels or plays; oral practice; outside reading with oral and written reports. A general education course in foreign language.

***4. Intermediate (3) II**
Prerequisite: French 3 or three years of high school French.
Continuation of French 3. A general education course in foreign language.

5. Intermediate (2) I
Prerequisite: French 2 or two years of high school French.
A practical application of the fundamental principles of grammar by means of oral and written work based on French texts. A general education course in foreign language.

6. Intermediate (2) II
Prerequisite: French 5 or three years of high school French. Continuation of French 5.

8A-8B. Scientific Reading (3-3) I
Prerequisite: French 2 with a grade of C or two years of high school French.
Reading taken from the fields of chemistry, physics, medicine, zoology, biology, etc. Outside readings of books and periodicals, with written reports.

10. Conversation (2) I
Prerequisite: French 2 or two years of high school French.
Practice in the spoken language; practical vocabulary, conversation on assigned topics; simple dialogues and plays.

11. Conversation (2) II
Prerequisite: French 10 or French 3, or three years of high school French.
Continuation of French 10.

***40. French Civilization (2) I**
(Same course as Humanities 42)
Conducted in English. No prerequisite.
The major currents and characteristics of French culture, as expressed through the centuries in literature, art, philosophy, music, and science. A general education course in the area of foreign languages. Not open to students with credit in Humanities 42 or in French 15.

***41. French Civilization (2) II**
(Same course as Humanities 43)
Conducted in English. No prerequisite.
Continuation of French 40. A general education course in the area of foreign languages. Not open to students with credit in Humanities 43 or in French 16.

UPPER DIVISION COURSES

101A-101B. Conversation and Composition (3-3) Year Course
Beginning Semester I
Prerequisites: French 4 and 6 with a grade of C, or consent of instructor.
Translation into French from moderately difficult English prose. Outside reading of modern French prose, with written reports in French monthly. Readings and oral discussions in French of various facets of French life and culture.

105A-105B. Modern French Drama (3-3) Year Course
Beginning Semester I
(Offered in 1961-62)
Prerequisites: French 4 and 6 with a grade of C.
Plays of Victor Hugo, de Vigny, de Musset, Scribe, Augier, Dumas fils, Pailleron, Brieux, Hervieu, Maeterlinck, Rostand, and others read and discussed as to subject matter and technique. Outside reading and reports.

107A-107B. Eighteenth Century Literature (3-3) Year Course
Beginning Semester I
(Offered in 1960-61)
Prerequisites: French 4 and 6 with grade of C.
The works of Montesquieu, Voltaire, Rousseau, the Encyclopédistes, as well as the theatre and novel of the period. Outside reading and reports.

110A-110B. Modern French Novel (3-3) Year Course Beginning Semester I
Prerequisites: French 4 and 6 with grade of C.
The French novel from Victor Hugo to the present day, including such authors as: Hugo, Dumas, Stendahl, Balzac, Flaubert, Loti, Anatole France, Bourget, Bordeaux, Bazin, Barrès, Romain Rolland, A. Gide, Marcel Proust, and others. Class reading, outside reading, and reports.

111A-111B. Seventeenth Century Dramatic Literature (3-3)
Year Course Beginning Semester I
(Offered in 1962-63)
Prerequisites: French 4 and 6 with a grade of C.
Reading in class of plays of Molière, Corneille, and Racine. Outside readings and lectures on the background of the seventeenth century in France.

***140. French Civilization (2) I**
(Same course as Humanities 142)
Conducted in English. No prerequisite.
An advanced course in French culture of the past and present, with emphasis on the arts, philosophy, and literature. Lectures, class discussions, outside readings, written reports on individual topics. A general education course in the area of foreign languages. Not open to students with credit in Humanities 142 or in French 115.

***141. French Civilization (2) II**
(Same course as Humanities 143)
Conducted in English. No prerequisite.
Continuation of French 140. A general education course in the area of foreign languages. Not open to students with credit in Humanities 143 or in French 116.

150-S. Advanced Phonetics and Diction (3) Summer
Prerequisite: Two years of college French.
For students and teachers of French wishing to perfect their pronunciation and diction. Correct formation of French sounds in isolation and combination. Class exercises, individual drill, and use of special discs and tape recording.

166. Honors Course (Credit to be arranged) I, II
Refer to the Honors Program.

198. Comprehensive Reading and Survey Course (3) II
Designed to fill up the gaps in the reading done in courses. Class meeting once a week for guidance, reports, and quizzes. Required of all seniors majoring in French.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of instructor.

GRADUATE COURSES

214. Contemporary French Literature (2) I
Prerequisite: Nine units of upper division French.
An intensive study of the current movements and techniques in the novel, poetry, and theatre in France from 1900 to the present day. Class discussion, outside readings, written reports.

220. Explication de Textes (2) II
Prerequisite: Nine units of upper division French.
An introduction to the analytical French approach to the detailed study of literature. Demonstrations by instructor and students. This course aims to give teachers of French a greater mastery of French language and literature.

290. Bibliography (1) See Romance Languages

298. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of staff; to be arranged with department chairman and instructor.

299. Thesis (3)
Prerequisites: An officially appointed thesis committee and advancement to candidacy.
Guidance in the preparation of a project or thesis for the master's degree.
Master's degree candidates in French are expected to substitute a comprehensive examination for the thesis. In unusual cases a student may write a thesis with the permission of the department.

GENERAL LANGUAGE

Faculty assigned to teach courses in general language are drawn from the Department of Foreign Languages.

IN THE DIVISION OF HUMANITIES

Major or minor work is not offered in general language.

LOWER DIVISION COURSES

20. Latin and Greek Word Derivation (3) I, II
(Same course as English 20)

A general and elementary course in philology. A study of Latin and Greek roots of most frequent occurrence in English, and of the English words derived from them. No prerequisite. Not open to students with credit for English 20.

30. Pronunciation of French (1) I
Three hours per week for eight weeks. No prerequisite.
A course designed especially to meet the needs of singers, radio announcers, etc.

31. Pronunciation of Italian (1) I
Three hours per week for eight weeks. No prerequisite.
A course designed especially to meet the needs of singers, radio announcers, etc.

32. Pronunciation of German (1) II
Three hours per week for eight weeks. No prerequisite.
A course designed especially to meet the needs of singers, radio announcers, etc.

33. Pronunciation of Spanish (1) II
Three hours per week for eight weeks. No prerequisite.
A course designed especially to meet the needs of singers, radio announcers, etc.

GENERAL SCIENCE

IN THE DIVISIONS OF LIFE SCIENCES AND PHYSICAL SCIENCES

Majors in the general science area, leading to the junior high school or general secondary credential, are offered to students in teacher education. A major is not available in arts and sciences.

GENERAL SCIENCE MAJORS IN TEACHER EDUCATION

Junior High School Credential

Major for the Junior High School Credential. A teaching major in general science is offered with the A.B. degree and junior high school credential to students with teaching minors in home economics or industrial arts. The major is in addition to 45 units in general education courses. Students taking this credential must complete the teaching major and minor and additional requirements in professional education courses.

It is recommended that this credential be taken in combination with the general elementary or special secondary credential. For a description of this program, refer to Combination of Credentials in the section of the catalog on Professional Curricula in Teacher Education. Students wishing to secure the junior high school credential under conditions other than those described above should consult with the Coordinator of Secondary Education.

Requirements in the Major

Requirements in the major. The major consists of a minimum of 33 units and must include courses in all of the following areas of science: astronomy, botany, chemistry, geology, physics, and zoology. Students electing this major must have one year each of high school algebra and geometry, or equivalent.

Lower Division. Minimum requirements include Biology 3 and 4, or Biology 5, and Physical Science 1 and 2, or equivalent courses.

Upper Division. A minimum of 12 upper division units to include Botany 119-S or Zoology 119-S, Physical Science 130 or 150, and at least one more course in each of life and physical sciences. Electives to complete the minimum of 33 units in the major may be taken in lower or upper division courses, to be selected from the following: Industrial Arts 85, Zoology 8 and 9, Biology 160, 161, Industrial Arts 185, Physical Science 130 or 150, and Zoology 165.

Professional Courses in Teacher Education

Professional Courses in Teacher Education. 24 upper division units to include Education 100, 110, 120, 180, 121 (methods in the major and minor fields), and Health Education 151.

For additional information on this credential, refer to the Junior High School Credential in the section of the catalog on Professional Curricula in Teacher Education.

General Secondary Credential

Majors for the General Secondary Credential. A teaching major is offered for the general secondary credential in (1) life science and general science and (2) physical science and general science. For a description of these majors, refer to the section of the catalog on Life Science or on Physical Science.

GENERAL SCIENCE MINOR IN TEACHER EDUCATION

General Elementary and Kindergarten-Primary Credentials

Minor for the General Elementary and Kindergarten-Primary Credentials. A minor in general science is offered for the general elementary or kindergarten-primary credential. This minor consists of a minimum of 15 units to include Biology 3 and 4, or Biology 5, or approved equivalents, Physical Science 1 and 2, or approved equivalents, and six upper division units chosen from Biology 160, Botany 119-S, Industrial Arts 185, 186, Zoology 119-S and 165.

GEOGRAPHY

IN THE DIVISION OF SOCIAL SCIENCES

Professors: Post; Richardson; Storm
Associate Professor: Taylor, J. W. (Chairman)
Assistant Professors: Eidemiller; Woodruff; Yahr
Instructor: Gonzalez

A major and minor in geography are offered with the A.B. degree in *arts and sciences.* Courses in the major are in addition to 45 units in general education. A minor is not required of geography majors for the bachelor's degree.

MAJOR

Lower Division. Geography 1 and 2; and Geology 1A-1B (which may be used as part of a geology minor if desired). Recommended: A reading knowledge of German, French, or Spanish.

Upper Division. 24 upper division units in geography to include Geography 180 and 181. Six units in related fields may be accepted as part of the major with approval of the chairman of the department.

MINOR

A minor in geography is offered in arts and sciences. The minor consists of 15 to 22 units in geography, six units of which must be in courses carrying upper division credit.

THE MASTER'S DEGREE

The master of arts degree for teaching service in social science with a concentration in geography is offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

LOWER DIVISION COURSES

***1. Introduction to Geography: Physical Elements (3) I, II**
The nature of maps, weather and climates of the world; natural vegetation; land forms and their associated soils, with reference to their climatic relationships; the seas and their coasts. Related field observations. May count for physical science general education credit provided Geography 3 has not been used to fulfill the same requirement.

***2. Introduction to Geography: Cultural Regions (3) I, II**
Prerequisite: Geography 1 or consent of instructor.
The regional differentiation of the world by human activity; areal bases of economy and nationality. A social science course in general education. Not open to students with credit for Geography 12A or 12B.

***3. Weather (3) I, II**
Elements of weather, air masses, storms, and their geographic distribution; practical instruction in the use of weather instruments, maps, and records. May count for physical science general education credit provided Geography 1 has not been used to fulfill the same requirement.

***12A-12B. Culture Worlds (3-3) Year Course Beginning Semester I**
A study of the evolution, distinguishing cultural characteristics and physical features of the major culture regions of the world, with emphasis on the role man has played in the alteration of the natural landscape. A general education course in social science. Not open to students with credit for Geography 2.

UPPER DIVISION COURSES

100. Climatology (3) II
Prerequisite: Geography 1 or 3, or consent of instructor.
A survey of the principal classifications of climates of the world; regional characteristics of climate; relations to soils, vegetation, and human activities.

120. California (3) I, II
Prerequisite: Geography 1 or consent of instructor.
The physiographic regions of California and the cultural landscapes developed by the successive cultural groups.

121. United States (3) I, II
Prerequisite: Geography 1 or consent of instructor.
The natural regions of the United States, their formation and economic and historical development.

122. Canada and Alaska (3) II
Prerequisite: Geography 1 or consent of instructor.
The physical and historical bases of Canadian and Alaskan regionalism; the economic and strategic importance of these two areas.

123. Middle America (3) II
Prerequisite: Geography 1 or consent of instructor.
The land and peoples of Mexico, Central America, and the islands of the Caribbean; a survey of the resources, economies, and trade of the region.

124. South America (3) I
Prerequisite: Geography 1 or consent of instructor.
A study of the physical regions and human geography of South America, including a review of the history of colonization and the exploitation of resources.

125. Mediterranean Area (3) II
Prerequisite: Geography 1 or consent of instructor.
A study of the cultural development of the countries of Southern Europe, Western Asia, and North Africa in relation to physical background and resources.

126. Northern Europe (3) I
Prerequisite: Geography 1 or consent of instructor.
A study of the cultural development of the countries of northern and eastern Europe in relation to physical background and historical evolution.

127. Soviet Union (3) I
Prerequisite: Geography 1 or consent of instructor.
Analysis of natural resources, agricultural production, industrial growth, and transportation.

128. Southern and Eastern Asia (3) II
Prerequisite: Geography 1 or consent of instructor.
The cultural regions of southern and eastern Asia, their physical environment and historical development.

129. Oceania (3) II
Prerequisite: Geography 1 or consent of instructor.
The physical geography, peoples, economies, and trade of Oceania, Australia, and New Zealand.

150. World Political Geography (3) I
A study of geography as it relates to the strength of nations and international relations. Not open for credit to AFROTC contract students.

***151. Economic Geography: Primary Production (3) I**
Prerequisite: Geography 1 or 12A-12B, or consent of instructor.
The geography of agricultural production and the extractive industries in relation to world commerce. A general education course in social science.

***152. Industrial Geography (3) II**
Prerequisite: Geography 1 or 12A-12B, or consent of instructor.
Principles of industrial location, with emphasis on the distribution of the world's major manufacturing regions; transportations and world trade. A general education course in social science.

***153. Conservation of Natural Resources (3) I**
Prerequisite: Geography 1 or consent of instructor.
Nature and extent of mineral, soil, water, forest, and wildlife resources and their conservation, with particular emphasis on the United States against a general background of world resources. Conservation philosophies and practices and their geographic bases. A general education course in social science.

166. Honors Course (Credit to be arranged) I, II
Refer to the Honors Program.

180. Field Geography (3) II
Prerequisites: Junior, senior or graduate standing and the completion of at least 12 units in geography, including Geography 1 and 2, or 12A-12B, and consent of instructor.
Directed fieldwork in physical and cultural geography. May be repeated for a total of six units.

181. Maps and Graphic Methods (3) I
The use and evaluation of maps and graphic aids in the teaching of geography and other fields in the physical and social sciences. Practice in the use of lettering guides and in reproducing maps and graphs.

182. Use and Interpretation of Aerial Photographs (2) II
One lecture and three hours of laboratory.
Prerequisite: Geography 1 and consent of instructor.
The planning of photo reconnaissance, correction of photo errors in the construction of base maps, and principles of sterescopy. Emphasis on the use of standard photogrammetric instruments and the interpretation of aerial photographs.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisites: At least 15 units of A or B work in geography and consent of instructor.

GRADUATE COURSES

200A-200B. Seminar (2-2) Year Course Beginning Semester I

290. Bibliography (1)
Exercises in the use of basic reference books, journals, and specialized bibliographies, preparatory to the writing of a master's project or thesis.

298. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of staff; to be arranged with department chairman and instructor.

299. Thesis (3)
Prerequisites: An officially appointed thesis committee and advancement to candidacy.
Guidance in the preparation of a project or thesis for the master's degree.

GEOLOGY

IN THE DIVISION OF PHYSICAL SCIENCES

Professor: Roberts
Associate Professors: Brooks, B. (Chairman); Thomas, B. E.
Assistant Professors: Ford, A. B.; Milow
Lecturers: Carsola; Woodard, W. T.

A major in geology is offered in *arts and sciences* with the A.B. or B.S. degree. Courses in the major are in addition to 45 units in general education courses, except that nine units in chemistry and physics may be counted in general education toward the A.B. degree or 12 units in chemistry, physics, and biology toward the B.S. degree. Students majoring in geology are not required to complete a minor for the bachelor's degree.

A minor in geology is offered in *arts and sciences.*

MAJOR WITH THE A.B. DEGREE

Lower Division. Geology 1A, or 2 and 3, Geology 1B, 21, and 24; Chemistry 1A-1B; Engineering 1 (if mechanical drawing was not completed in high school), Engineering 2; Math 22 or 50; and Physics 2A-2B-3A-3B or 4A-4B-4C. Recommended: Chemistry 5A, Math 51, Engineering 21, and a foreign language.

Upper Division. 24 upper division units in geology to include Geology 100, 106, 108A, 108B, and 198. For the geophysics field, the following courses should be taken in addition to the major: Math 118A, Physics 103, 107, and Geology 112.

MAJOR WITH THE B.S. DEGREE

The major consists of basic requirements in the lower and upper division for all students plus the requirements in one of the following options: (a) General Physical or Economic Geology, (b) Paleontology and Stratigraphy, (c) Geophysics.

Lower Division Requirements for All Students. Geology 1A or 2 and 3, 1B, 21, 24; Chemistry 1A and 1B; Engineering 1 (if mechanical drawing was not completed in high school), and Engineering 2; Biology 3 or 4 (30-32 units). Recommended: a foreign language.

Upper Division Requirements for All Students. 36 to 40 upper division units in approved courses to include the following: Geology 100, 108A, 108B, 124, 198, and 120 or 121 (19 units).

Plus requirements in one of the following options:

(a) General Physical or Economic Geology:

Lower Division. Mathematics 12 or equivalent, 40 and 50; Physics 2A-2B and 3A-3B; Chemistry 5A; Engineering 21 (28 units).

Upper Division. Geology 106; and two of the following courses: Geology 104, 107, 110, 125; and electives approved by the departmental adviser to complete 36 upper division units.

(b) Paleontology and Stratigraphy:

Lower Division. Biology 3 or 4 (take the course not previously completed), and Biology 15, or their equivalents; Mathematics 21 and 22; Physics 2A-2B and 3A-3B (20 units).

Upper Division. Geology 106, 107, and 116; and three courses, one to be chosen from *each* of the following groups: Biology 155 or 160; Biology 110, Zoology 112, or Zoology 119-S; Botany 101B, Zoology 106, or Zoology 114.

(c) Geophysics:

Lower Division. Mathematics 50, 51, and 52; Physics 4A-4B-4C (25 units).

Upper Division. Mathematics 118A; Physics 101, 103, 105, and 110; Geology 110 and 112 (21 units). Recommended: Mathematics 118B, Physics 114.

MINOR

A minor in geology is offered in arts and sciences. The minor consists of 15 to 22 units in geology, six units of which must be in courses carrying upper division credit.

LOWER DIVISION COURSES

1A. Physical (4) I

Three lectures and three hours of laboratory with related field study during the semester.

The composition, origin, and distribution of earth materials, and their modification through mechanical and chemical processes. Not open to students with credit for Geology 2.

1B. Historical (4) II

Three lectures and three hours of laboratory. Arrangement for field study during the semester.

Prerequisite: Geology 1A or equivalent.

Theories of earth origin, and the evolutionary history of the earth as traced through rock and fossil records. Consideration of the Paleontologic Sequence.

***2. General Geology (3) I, II**

Earth materials and processes, the development of land forms, and a brief consideration of the history of the earth. Open to all students except those with previous credit in geology. No prerequisites. A physical science general education course in the area of the natural sciences.

***3. General Geology Laboratory (1) I, II**

Three hours of laboratory. No prerequisite.

Recognition of common earth materials with experience in both field and map relationships. Designed to accompany Geology 2, but entirely separate and complete in itself. Open to all students except those with previous laboratory credit in geology. A physical science general education course meeting the laboratory requirement in the area of the natural sciences.

21. Elementary Mineralogy (4) II

Two lectures and six hours of laboratory. No prerequisite.

Practice in the determination of the common minerals; their geologic environment, utilization and economic significance.

24. Petrology (3) I

Two lectures and three hours of laboratory.

Prerequisites: Geology 1A, or 2 and 3, and Geology 21.

The origin, occurrence, identification, and classification of rocks and minerals with emphasis on hand specimen characteristics.

UPPER DIVISION COURSES

100. Structural Geology (3) I

Prerequisites: Geology 1A and 1B.

The structural and major topographical features of the earth. Faulting, folding, and orogenic forces with practical problems and illustrations. Lectures, discussions, and occasional field trips.

102. Geology of California (3) II

(Offered in 1960-61 and alternate years)

Prerequisites: Geology 1A and 1B.

Directed reading and group discussion of California geologic literature. Designed to acquaint students with the important structural, stratigraphic, and geomorphic units of the state and with the great variety of source materials thereon.

104. Geomorphology (3) II

(Offered in 1959-60 and alternate years)

Prerequisite: Geology 1B.

Development and classification of land forms with consideration of processes involved.

106. Paleontology (4) I

Two lectures and six hours of laboratory.

Prerequisite: Geology 1B.

Principles and methods exemplified by a study of the morphology, classification, habit, and geologic significance of fossil invertebrates.

107. Principles of Stratigraphy (3) II
(Offered in 1960-61 and alternate years)
Two lectures and three hours of laboratory.
Prerequisites: Geology 24 and 106.
Procedures used in analysis, correlation, and classification of stratigraphic units. The chronologic significance of the important physical and biological criteria.

108A. Field Geology (4) II
One lecture per week and 12 Saturday field sessions in the local area.
Prerequisites: Geology 24 and 100, and Engineering 2.
Techniques and methods of geologic observation, interpretation, and field mapping.

108B. Field Geology (4) I
Prerequisite: Geology 108A.
Geologic investigation of an assigned area with preparation of an individual report and a geologic map.

110. Introduction to Geophysics (3) I
Two lectures and three hours of laboratory.
Prerequisites: Mathematics 3A or 50, Physics 2B and 3B or equivalents, and Geology 100 or concurrent registration therein.
Physics of the earth and its application to prospecting for oil, gas, and mineral deposits.

112. Advanced Geophysics (3) II
Two lectures and three hours of laboratory.
Prerequisites: Mathematics 52, Physics 103 and 107, and Geology 110.
Theoretical principles underlying the physics of the earth and their application to the design and the operation of geophysical instruments, and to the interpretation of the geophysical records.

116. Micropaleontology (3) II
Two lectures and three hours of laboratory.
Prerequisite: Geology 106.
A study of the morphology, classification and geologic significance of the various microfossils.

120. Ore Deposits (3) I
(Offered in 1960-61 and alternate years)
Prerequisites: Completion or concurrent registration in Geology 24 and 100.
Geologic relations, origin, distribution, and economics of metallic and nonmetallic mineral deposits.

121. Petroleum Geology (3) I
(Offered in 1959-60 and alternate years)
Prerequisites: Completion or concurrent registration in Geology 24 and 100.
Geologic occurrence of petroleum and the application of geologic principles in its exploration and production.

124. Optical Mineralogy (3) II
Two lectures and three hours of laboratory.
Prerequisite: Geology 21.
Theory and use of the polarizing microscope for determining optical properties of minerals as an aid to their identification.

125. Petrography (4) I
(Offered 1959-60 and alternate years)
Two lectures and six hours of laboratory.
Prerequisite: Geology 124.
A study of rocks with the polarizing microscope; identification of mineral constituents; interpretation of textures; classification of rocks; problems of genesis.

166. Honors Course (Credit to be arranged) I, II
Special work in any of several phases of geologic science for students of demonstrated ability. Refer to the Honors Program.

198. Senior Report (2) I, II
Six hours of laboratory and discussions.
Prerequisite: Senior standing within the department.
Individual project from selected fields of Geology with oral reports of progress to the class and a final written report of work accomplished. May be repeated for a total of four units.

199. Special Study (1-4) I, II
Individual study in field, library, laboratory, or museum work. Four units maximum credit.
Prerequisites: Acceptable grade average in at least 12 upper division units within the major and consent of staff.

GRADUATE COURSES

200. Seminar (2 or 3) I, II
Prerequisite: Bachelor's degree in geology or equivalent.
An intensive study of some phase of geology such as geophysics, ground water hydrology, geochemistry, seismology, volcanology, or geomorphology. May be repeated with advanced or new subject material for additional credit.

GERMAN

IN THE DIVISION OF HUMANITIES

Professor: Wolf
Assistant Professors: Lawson, R. H.; Piffard

MINOR IN ARTS AND SCIENCES

A minor in German is offered in arts and sciences. The minor consists of 15 to 22 units in German (exclusive of course equivalents), six units of which must be in courses carrying upper division credit.

MINORS IN TEACHER EDUCATION

General Secondary Credential

Minor for the General Secondary Credential. A teaching minor in German is offered for the general secondary credential. This minor, which may be used for the A.B. degree, consists of a minimum of 21 units (exclusive of course equivalents) to include the following courses: German 1, 2, 3, 4, 5, 6; and German 101A-101B.

Before taking a directed teaching assignment in the language (Education 180 or 316A), the candidate for the credential must pass a proficiency examination, administered by the Department of Foreign Languages, in the language and its area civilization. (German 40-41, or 140-141, prepare for this latter examination in the area civilization).

General Elementary and Kindergarten-Primary Credentials

Minor for the General Elementary and Kindergarten-Primary Credentials. A minor in foreign languages is offered for the general elementary or kindergarten-primary credential. This minor consists of a minimum of 15 units in one or more foreign languages (German, French, Spanish), six units of which must be in courses carrying upper division credit.

LOWER DIVISION COURSES

***1. Elementary (3) I, II**
Three lectures and one hour of laboratory.
Pronunciation, oral practice, readings on German culture and civilization, minimum essentials of grammar. A general education course in foreign language.

***2. Elementary (3) I, II**
Three lectures and one hour of laboratory.
Prerequisite: German 1 or one year of high school German.
Continuation of German 1. A general education course in foreign language.

***3. Intermediate (3) I**
Prerequisite: German 2 or two years of high school German.
Reading in German of cultural material, short stories, novels or plays; oral practice; outside reading with oral and written reports. A general education course in foreign language.

***4. Intermediate (3) II**
Prerequisite: German 3 or three years of high school German.
Continuation of German 3. A general education course in foreign language.

5. Intermediate (2) I
Prerequisite: German 2 or two years of high school German.
A practical application of the fundamental principles of grammar by means of oral and written work based on German texts.

6. Intermediate (2) II
Prerequisite: German 5 or three years of high school German.
Continuation of German 5.

8A-8B. Scientific Reading (3-3) I
Prerequisite: German 2 with a grade of C or two years of high school German. Prerequisite for 8B: German 8A or 3 with a grade of C or three years of high school German.
First semester, readings in scientific reader on chemistry, physics, etc.; occasional written reports on scientific subjects read outside of class; sight reading. Second semester, readings in special scientific or technical works; weekly written reports required; sight reading.

10. Conversation (2) I
Prerequisite: German 2 or two years of high school German.
Practice in the spoken language; practical vocabulary; conversation on assigned topics; simple dialogues and plays.

11. Conversation (2) II
Prerequisite: German 10 or German 3, or three years of high school German.
Continuation of German 10.

***40. German Civilization (2) I**
(Same course as Humanities 44)
Conducted in English. No prerequisite.
The major currents and characteristics of German culture, as expressed through the centuries in literature, art, philosophy, music, and science. A general education course in the area of foreign languages. Not open to students with credit in Humanities 44 or in German 15.

***41. German Civilization (2) II**
(Same course as Humanities 45)
Conducted in English. No prerequisite.
Continuation of German 40. A general education course in the area of foreign languages. Not open to students with credit in Humanities 45 or in German 16.

UPPER DIVISION COURSES

101A-101B. Conversation and Composition (3-3) Year Course Beginning Semester I
Prerequisites: German 4 and 6 with a grade of C, or consent of instructor.
Translation into German of moderately difficult English prose. Free composition in German, written and oral. Outside reading of modern German plays and prose, discussions in German. Oral and written practice in conversational German.

102A-102B. German Literature of the Eighteenth Century (3-3) Year Course Beginning Semester I
Prerequisites: German 4 and 6 with a grade of C, or consent of instructor.
An introduction to the literature of the German Enlightenment, the "Storm and Stress," the Classical Age, and the beginnings of the Romantic School. Outside readings and reports.

110A-110B. The Modern Novel and Short Story (3-3) Year Course Beginning Semester I

Prerequisites: German 4 and 6 with a grade of C or better, or consent of instructor.

An introduction to German prose fiction from Romanticism to the present time.

***140. German Civilization (2) I**

(Same course as Humanities 144)

Conducted in English. No prerequisite.

An advanced course in German culture of the past and present, with emphasis on the arts, philosophy, and literature. Lectures, class discussions, outside readings, written reports on individual topics. A general education course in the area of foreign languages. Not open to students with credit in Humanities 144 or in German 115.

***141. German Civilization (2) II**

(Same course as Hunanities 145)

Conducted in English. No prerequisite.

Continuation of German 140. A general education course in the area of foreign languages. Not open to students with credit in Humanities 145 or in German 116.

*** 142. The Golden Age of German Literature (3) I, II**

(Same course as Comparative Literature 142)

Masterpieces of German literature from the Eighteenth and early Nineteenth Centuries. A general education course in literature, philosophy, and the arts. Not open to students with credit for Comparative Literature 142.

199. Special Study (1-6) I, II

Individual study. Six units maximum credit.

Prerequisite: Consent of instructor.

HEALTH EDUCATION

IN THE DIVISION OF HEALTH EDUCATION, PHYSICAL EDUCATION, AND RECREATION

Professors: Kitzinger; Lauritsen (Chairman)
Associate Professors: Shannon; Sportsman
Assistant Professor: Grawunder
Lecturer: Huff

A major in health education is offered with the B.S. degree in *arts and sciences* and in *teacher education.* Courses in the major are in addition to 45 units in general education courses, except that nine units in the natural sciences may be counted in general education. A minor is not required for the B.S. degree. Students who plan to take the general secondary credential are advised to include a teaching minor for the credential in the undergraduate program.

A minor in health education is offered in *arts and sciences* and in *teacher education.*

MAJOR IN ARTS AND SCIENCES

Lower Division. Health Education 65, 90; Zoology 8 and 9; Chemistry 2A-2B; Home Economics 4A; Psychology 12.

Upper Division. 36 upper division units to include Health Education 145, 150 or 151, 153, 175, 181, 190, 191; Microbiology 101; Education 112 (or equivalent); Physical Education 161; Sociology 135; and four to six units to be selected in consultation with the departmental adviser.

MINOR IN ARTS AND SCIENCES

A minor in health education is offered in arts and sciences. The minor consists of 15 to 22 units in health education, nine units of which must be in courses carrying upper division credit. Courses will be determined in consultation with the departmental representative.

MAJOR IN TEACHER EDUCATION

General Secondary Credential

Major for the General Secondary Credential. A teaching major in health education is offered for the general secondary credential. This teaching major, which may be used for the B.S. degree, is the same as the major in arts and sciences. Requirements for the general secondary credential include completion of a bachelor's degree, the teaching major in health education, a teaching minor for the credential, and the credential requirements in a postgraduate year, to include six graduate units selected from Health Education 200, 202, 205, 210.

Refer to the section of the catalog on Professional Curricula in Teacher Education for a description of requirements in the postgraduate year.

MINOR IN TEACHER EDUCATION

General Secondary Credential

Minor for the General Secondary Credential. A teaching minor in health education is offered for the general secondary credential. This minor, which may be used for the A.B. degree, consists of a minimum of 21 units to include, in the lower division, Health Education 21, 65 and 90; and in the upper division, 15 units to be selected from Health Education 145, 151, 152, 153, 154, 175, 181, 190, 191, and Physical Education 161.

THE MASTER'S DEGREE

The master of arts degree for teaching service with a concentration in health education is offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

LOWER DIVISION COURSES

***21. Principles of Healthful Living (2) I, II**
An application of modern knowledge to the development of understandings, attitudes, and practices essential to healthful living. A required general education course. Fulfills statutory requirement in public safety.

65. Community Health (3) I, II
Community health problems; the role of the citizen, of the public, and of community health agencies in promoting and protecting the health of the community.

***90. Physiology of Reproduction (1) I, II**
A series of lectures and discussions dealing with normal and abnormal physiology and anatomy of reproduction; facts and frauds in sex hygiene, and related topics. A general education course in family life education.

UPPER DIVISION COURSES

145. Safety Education and Accident Prevention (3) II
Highway safety, the fundamentals of safety programs and techniques in home, school and industry. Partially satisfies the requirements for state credential in driver education.

150. Health Education for Elementary Teachers (2) I, II
The teacher's function in the different aspects of the school health program, with emphasis upon the planning and presentation of instructional materials and upon community resources and relationships. Not open to students with credit in Health Education 151.

151. Health Education for Secondary Teachers (2) I, II
A study of the health status of adolescents and of the teacher's function in the secondary school health program. Emphasis is placed upon statutory requirements in stimulants and narcotics and upon safety and accident prevention. Not open to students with credit in Health Education 150.

152. School Health Instruction Programs (3) I
The construction of the health education program, including objectives, scope and sequence of instruction, teaching methods, source materials, evaluation procedures, and instructional units.

153. Administration of the School Health Program (3) II
Administrative responsibilities and procedures in organizing and conducting the school health program. Principles, policies, and practices involved in instruction, service, environment, and community relationships.

154. Workshop in Health Education (2) Summer
For elementary and secondary administrators, school nurses, and teachers. The workshop provides opportunities for participants to work together toward the improvement of the total school health program in such areas as health instruction, health services, health environment, and community health. May be taken three times for credit.

166. Honors Course (Credit to be arranged) I, II
Refer to the Honors Program.

175. Health in Later Maturity (3) I
An approach to the conservation of human resources, with particular emphasis on understandings, attitudes, and practices related to health in later maturity. Designed for those with a personal or professional interest in the field.

181. Health and Medical Care (3) II
Prerequisites: Senior or graduate standing with a major or minor in health education or closely related areas.

A study of health values, concepts, and attitudes; health products and facilities; hospital care and hospitalization plans; governmental health controls; economic and cultural influences upon health and medical care; professional contributions, relationships, and careers; national and international health programs. Not open to students with credit for Sociology 121.

190. Introduction to Public Health (3) I
Philosophy, development, organization, administration, and legal aspects of public health in the United States. Disease prevention and control, health education, and the other functions and activities of official health departments, voluntary agencies, private physicians and others engaged in professional health work.

191. Supervised Field Experience (1-3) I, II
Prerequisites: Senior standing and consent of the chairman of the department. Supervised practical experience in local health agencies.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of the the special study adviser.

GRADUATE COURSES

200. Evaluation Procedures in Physical Education, Health Education and Recreation (3) I (Same course as Physical Education 200)
A study of tests and measurements in the profession with practice in their use, construction and interpretation of results. Not open to students with credit for Physical Education 200.

202. Problems in Health Education (3) (Alternate Years)
Current problems in Health Education, studied through a review of the literature, discussion of trends, observation of school situations, together with the analysis and evaluation of actual problems. Written reports required.

205. Curriculum in Physical Education and Health Education (3)
(Offered in alternate years) (Same course as Physical Education 205)
Analysis of current curricula in physical education and health education, with special emphasis upon curriculum construction and evaluation. Not open to students with credit for Physical Education 205.

210. Seminar (3) I, II
Prerequisites: Major or minor in health education, physical education, or a closely related area, or consent of instructor.

Seminars are offered in the following areas of health education. None of the fields may be repeated for credit.

A. Stimulants and depressants
B. Communicable and noncommunicable disease
C. Dental health

298. Special Study (1-6) I, II
Prerequisite: Consent of the special study adviser.
Individual study. Six units maximum credit.

299. Thesis (3) I, II
Prerequisites: An officially appointed thesis committee and advancement to candidacy.
Guidance in the preparation of a project or thesis for the master's degree.

HISTORY

IN THE DIVISION OF HUMANITIES

Professors: Johnson, A. T.; Nasatir; Ragen; Ridout (Chairman); Rohfleisch; Webb
Associate Professors: Merrill, J. E.; Pincetl; Rader
Assistant Professors: Hanchett; Ridge; Van Aken; Wineman

A major and minor are offered in history in *arts and sciences*. A teaching minor is offered in *teacher education* for the general secondary credential. Courses in the major are in addition to 45 units in general education courses. History majors are not required to complete a minor for the bachelor's degree. A reading knowledge in one foreign language is required.

MAJOR

Lower Division. History 4A-4B or 8A-8B. Recommended: Both History 4A-4B and 8A-8B; and Political Science 1A-1B, or 71A-71B, or Economics 1A-1B. No freshman shall enroll in more than one lower division course in history during any one semester without the permission of the departmental adviser.

Upper Division. 24 upper division units in history, including History 198 and a minimum of a year of concentration in *each of three* of the following fields: (a) Ancient and Medieval; (b) Modern Europe; (c) United States; (d) Latin America; (e) Pacific Area and the Far East. These courses must be selected under the guidance of the chairman of the department.

Foreign Language. A reading knowledge of one foreign language is required. Proficiency may be demonstrated either by coursework (ordinarily 12 units) or by examination administered by the History Department.

MINOR IN ARTS AND SCIENCES

A minor in history is offered in arts and sciences. The minor consists of 15 to 22 units in history, nine units of which must be in courses carrying upper division credit, including a year course.

MINOR IN TEACHER EDUCATION

General Secondary Credential

Minor for the General Secondary Credential. A teaching minor in history is offered for the general secondary credential. The minor is not available to students with a major in social science. The teaching minor in history, which may be used for the A.B. degree, consists of a minimum of 21 units to include the following courses:

Lower Division. History 4A-4B or 8A-8B or 17A-17B; six units of social science electives to be chosen from anthropology, economics, geography (except Geography 1 or 3), political science, and sociology; and from zero to three units of additional social science electives (12-15 units).

Upper Division. Six to nine upper division units in history to complete the 21 unit minor.

THE MASTER'S DEGREE

The master of arts degree with a major in history and the master of arts degree for teaching service with a concentration in history are offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

EXPLANATION OF COURSES

NOTE: History 17A-17B does not count toward credit for a major in history.

Any undergraduate history course, with the exception of History 17A-17B may be taken either semester, the A part not being a prerequisite for the B part.

LOWER DIVISION COURSES

***4A-4B. History of Western Civilization (3-3) Year Course Beginning Semester I**

European institutions, culture, and thought from ancient times to the present. A general education course in the social sciences. (Formerly offered under the title, History of Europe.)

***8A-8B. History of the Americas (3-3) Year Course Beginning Semester I**

Survey of the history of the western hemisphere from its discovery to the present time. This year course meets the graduation requirements in American history, institutions and ideals. 8B meets the graduation requirement in California State and local government. A general education course in the social sciences.

***17A-17B. History of American Civilization (3-3) Year Course Beginning Either Semester**

Prerequisite: History 17A is a prerequisite for 17B.

Survey of the political and social development of the United States, with emphasis upon the rise of American civilization and ideals. This year course meets the graduation requirement in American history, institutions and ideals. The first semester course, 17A, also meets the requirement in U. S. Constitution; and the second semester course, 17B, meets the requirement in California state and local government. This course is a general education course in the social sciences.

UPPER DIVISION COURSES

111A-111B. Ancient History (3-3) Year Course Beginning Semester I

Fall semester: Greek history to the Roman conquest. Spring semester: Roman history to the fifth century A.D.

***121A-121B. Medieval History (3) Year Course Beginning Semester I**

European social, cultural, and political developments from the fall of Rome to the Renaissance. A general education course in the social sciences.

131A-131B. Renaissance and Reformation (3-3) Year Course Beginning Semester I

Personalities and events connected with the social, political, cultural, conomic and religious change between 1300 and 1600. Not open to students with credit for History 132-S.

132-S. Culture of the Renaissance (3) Summer

Development of art, literature, philosophy and social life between 1300 and 1600. Not open to students with credit for History 131A-131B.

141. Europe in the Seventeenth and Eighteenth Centuries (3) I

European thought, politics and international relations from the Thirty Years' War and Louis XIV to 1763.

142. The French Revolution and Napoleonic Era (3) II

France on the eve of the Revolution; the Great Revolution, 1789-1799; the Napoleonic Era.

143A-143B. Europe in the Nineteenth Century (3) Year Course Beginning Semester I

Reaction in Europe, the development of nationalism, the impact of industrialism and social reform.

144A-144B. Europe in the Twentieth Century (3-3) Year Course Beginning Semester I
Political and social developments from 1870 to the present.

145-S. Diplomatic History of Europe, 1870-1920 (3) Summer
Survey of treaties, alliances and ententes leading up to World War I; World War I and the subsequent international settlements to 1920.

147A-147B. Expansion of Russia (3-3) Year Course Beginning Semester I
Political, social, and economic expansion of Russia in Europe and Asia from the earliest times to the present. Second semester: Emphasis on the twentieth century.

151A-151B. History of England (3-3) Year Course Beginning Semester I
Political, constitutional, and social developments since the Norman Conquest. Recommended for prelegal students and majors in English.

156A-156B. History of British and European Imperialism (3-3) Year Course Beginning Semester I
A comparative study of the growth and decline of modern empires with emphasis on the nineteenth and twentieth centuries.

161. Mexico and Caribbean Countries (3) I
Special attention to relations between the United States and these countries, and to recent developments in Mexico.

162. South America Since Independence (3) II
Republics of South America. Development of nationality, struggles for political stability, exploitation, diplomatic and commercial relations with the United States, and other international problems of South America. Survey of present-day conditions.

166. Honors Course (Credit to be arranged) I, II
Refer to the Honors Program.

171A-171B. Rise of the American Nation (3-3) Year Course Beginning Semester I
The colonial period in American history through the American revolution.

***172A-172B. Development of the Federal Union (3-3) Year Course Beginning Semester I**
Political, cultural, social, and intellectual aspects of the Confederation and Convention of 1787; the administrations of Washington, through John Quincy Adams. This year course meets the graduation requirements in American history, institutions and ideals. History 172A meets the graduation requirement in United States Constitution. History 172B includes materials which meet the requirements in California state and local government. This course is a general education course in the social sciences.

173A-173B. The Expansion of the United States (3-3) Year Course Beginning Semester I
Lectures and readings on Jacksonian democracy, territorial expansion, the Mexican War, the slavery controversy, and the Civil War.

174. Emergence of the United States as a World Power (3) I, II
Postwar reconstruction and economic developments to the close of the nineteenth century.

175A.-175B. The United States in the Twentieth Century (3-3) Year Course Beginning Semester I
The United States as a world power; social and economic problems posed by the machine age; political action and adjustment, actual and proposed, intended as solutions for these problems.

176A-176B. American Foreign Policy (3-3) Year Course Beginning Semester I
Lectures and readings in the field of American foreign relations since 1776, with special emphasis, in the second semester, upon affairs since 1900. A general survey course. This year-course meets the graduation requirement in American history, institutions and ideals.

***179A-179B. Intellectual History of the American People (3-3) Year Course Beginning Semester I**

A study of the ebb and flow of ideas in the United States since the founding of the English colonies, with special attention devoted to social and political thought. This year course meets the graduation requirement in American history, institutions and ideals. A general education course in the social sciences.

181A-181B. History of the West (3-3) Year Course Beginning Semester I

The American frontier: Expansion, exploration, settlement and building of the new states, with emphasis upon frontier problems of defense, communications, finance, etc.; the development of cultural institutions. A critical examination of the causes, effects and results of the frontier experiences of the American people.

189. History of California (3) I, II

The economic, social, intellectual, and political development of California from the earliest times. Emphasis will be on the founding of California, international struggles for California; American conquest and Gold Rush Era; development of California as a state. This course meets the graduation requirement in California state and local government.

190A-190B. History of the Pacific Ocean Area (3-3) Year Course Beginning Semester I

A general survey of the history and civilization of the peoples of the Pacific, with special emphasis upon exploration, trade, international rivalries, and social evolution of the island areas.

191A-191B. History of the Far East (3-3) Year Course Beginning Semester I

Particular emphasis during the first semester upon the history, both internal and international, of the Far East through the nineteenth century. The second semester will be devoted to a consideration of developments in the twentieth century.

193. History of China (3) I

A survey of Chinese history and institutions from antiquity to the present.

194. History of Japan (3) II

A general survey of the political, economic and social development from the foundation of the empire to contemporary times. Special attention will be given to religions, philosophy, literature, and the arts.

198. Introduction to Historiography and Historical Method (2) II

Prerequisite: Senior standing.

Required of history majors and recommended for students in the social science major.

199. Special Study (1-6) I, II

Individual study. Six units maximum credit.

Prerequisite: Consent of instructor.

GRADUATE COURSES

201. Historiography and Historical Method (3) I, II

Required of all applicants for advanced degrees. Open to social science majors.

251A-251B. Seminar in English History (3-3) Year Course Beginning Semester I

Prerequisite: Consent of instructor. History 251A is a prerequisite for 251B.

Directed research in selected aspects of English history.

270A-270B. Seminar in American History (3-3) Year Course Beginning Semester I

Prerequisite: Consent of instructor. History 270A is a prerequisite for 270B.

An introduction to intensive investigation of various phases of American history.

276A-276B. Seminar in Diplomatic History (3-3) Year Course Beginning Semester I

Prerequisite: Consent of instructor. History 276A is a prerequisite for 276B.

Selected topics in recent diplomatic relations.

281A-281B. Seminar in the History of the West and California (3-3)
Year Course Beginning Semester I

Prerequisite: Consent of instructor. History 281A is a prerequisite for 281B.

Directed research in various topics in the History of the West and California.

290. Bibliography (1)

Exercises in the use of basic reference books, journals, and specialized bibliographies, preparatory to the writing of a master's project or thesis.

298. Special Study (1-6) I, II

Individual study. Six units maximum credit.

Prerequisite: Consent of staff; to be arranged with department chairman and instructor.

299. Thesis (3)

Prerequisites: An officially appointed thesis committee and advancement to candidacy.

Guidance in the preparation of a project or thesis for the master's degree.

HOME ECONOMICS

IN THE DIVISION OF FINE ARTS

Associate Professors: Comin; Dorris; Pahopin; Talboy (Chairman); Thomas, A. E.
Assistant Professor: Martin

A major in home economics is offered with the A.B. degree in *arts and sciences.* Two majors are offered in *teacher education:* a teaching major with the A.B. degree and special secondary credential and a teaching major leading to the general secondary credential in the postgraduate year. Courses in the major leading to a bachelor's degree are in addition to 45 units in general education courses, unless otherwise specified.

Students taking a major in home economics or in homemaking education are not required to complete a minor for the bachelor's degree. Students who plan to take the general secondary credential with a major in homemaking education are advised to include in the undergraduate program a teaching minor for the credential.

A minor in home economics is offered with the A.B. degree in *arts and sciences.* A teaching minor in home economics for the junior high school credential and a teaching minor in homemaking education for the general secondary credential are offered in *teacher education.*

HOME ECONOMICS MAJOR IN ARTS AND SCIENCES

Major With Emphasis in General Home Economics

Lower Division. Home Economics 2, 3, 15, 40, 41, 42, 43, 70; Art 6A and Economics 1A (both of which may be counted in general education); Biology 1; Chemistry 2A-2B; and Physics 5 (34 units). Twelve units in the natural sciences may be counted in general education.

Upper Division. 24 upper division units to include Home Economics 100, 115, 130, 131, 150, 151, 170, 180, and five units to be selected from Home Economics 102, 116, 117, and 135. A course in marriage and the family must be included either in the major or in general education.

Major With Emphasis in Food and Nutrition

This program is planned for students interested in qualifying professionally in the field of dietetics, institutional food management or commercial home economics. A student who successfully completes this program and receives departmental recommendation is eligible to apply for a year of internship under auspices of the American Dietetic Association. Upon completion of an administrative food clinic or dietetic internship, or a three-year apprenticeship under a qualified dietitian in a recognized hospital, a student is eligible for membership in the American Dietetic Association and recognition as a qualified dietitian. Additional food and nutrition careers include extension service, teaching, business, health agencies and research.

Requirements

Lower Division. Home Economics 2, 3, 15, 40, 41, 42, 43, 70; Art 6A and Economics 1A (both of which may be counted in general education); Business Administration 1A; Biology 3; Zoology 22; Chemistry 2A-2B and Chemistry 3; Physics 5 (40 units). Twelve units in the natural sciences may be counted in general education.

Upper Division. 29 upper division units to include Home Economics 100, 102, 103, 104, 150, 151, 170, 180, and eight units of upper division electives in home economics to be selected with approval of the adviser. A course in marriage and the family (Home Economics 135 or Sociology 135) must be included either in the major or in general education.

HOME ECONOMICS MINOR IN ARTS AND SCIENCES

A minor in home economics is offered in *arts and sciences.* The minor consists of 17 units to include the following courses: Home Economics 3, 15, 70, 150, and six upper division units of electives in home economics.

HOMEMAKING EDUCATION MAJORS IN TEACHER EDUCATION

Special Secondary Credential in Homemaking Education

Special secondary credential in homemaking education. Students taking this credential must complete a teaching major in homemaking education and additional requirements in professional education courses.

Requirements in the Major: Lower division: Home Economics 2, 3, 15, 40, 41, 42, 43, 70; Art 6A and Economics 1A (both of which may be counted in general education); Biology 1; Chemistry 2A-2B; and Physics 5 (34 units). Twelve units in the natural sciences may be counted in general education. Upper division: 24 upper division units in home economics to include Home Economics 100, 115, 130, 131, 150, 151, 170, 180, 181, and three units to be selected from Home Economics 102, 116, 117, and 135. A course in marriage and the family must be included either in the major or in general education.

Professional Courses in Teacher Education: 22 upper division units to include Education 100, 110, 120, 180, 121C, and Health Education 151.

General Secondary Credential

Major for the General Secondary Credential. A teaching major in homemaking education is offered for the general secondary credential. Students may complete requirements for this major and the general secondary credential in one of the following ways:

(1) By taking the special secondary credential in homemaking education with the A.B. degree; completing requirements in a teaching minor for the general secondary credential; and completing other credential requirements in a postgraduate year, to include four upper division or graduate units in home economics courses to be approved by the departmental adviser in homemaking education.

(2) By completing the home economics major in arts and sciences with the A.B. degree, and in addition Home Economics 181; a teaching minor for the general secondary credential; and the credential requirements in a postgraduate year, to include four upper division or graduate units in home economics courses to be approved by the departmental adviser in homemaking education.

Refer to the section of the catalog on Professional Curricula in Teacher Education for a description of requirements in the postgraduate year.

MINORS IN TEACHER EDUCATION

General Secondary Credential

Minor for the General Secondary Credential. A teaching minor in homemaking education is offered for the general secondary credential. This minor consists of a minimum of 21 units to include the following course: Lower division: Home Economics 3, 15, 70, and one to four units of electives in home economics (9-12 units). Upper division: Home Economics 150, 170, and seven to nine units of upper division electives in home economics (12-14 units). A student completing this minor may use it as an arts and sciences minor in home economics for the A.B. degree.

Junior High School Credential

Minor for the Junior High School Credential. A teaching minor in home economics is offered with the junior high school credential. This minor is the same as the minor in arts and sciences, except that the selection of elective courses must be made with approval of the departmental representative.

LOWER DIVISION COURSES

***1. General Home Arts (3) I, II**
Three lectures. No prerequisite.
A general education course in family life education. Consideration of necessary preparation for marriage with emphasis on a stable, happy democratic family life; family budgets and money management; finding a home to buy, build or rent; child care, proper training and guidance; home safety. Open to men and women.

2. Orientation to Home Economics as a Profession (1) I, II
One lecture. No prerequisite.
Introduction to the opportunities and requirements in various professional fields for home economists.

***3. Food and Nutrition (3) I, II**
One lecture and six hours of laboratory. No prerequisite.
Selection, purchase, and serving of meals with a consideration of nutritional needs of the family groups, food habits, and social customs; management problems. A general education course in family life education or in practical arts in the area of literature, philosophy, and the arts.

***4A. General Nutrition (2) I, II**
Two lectures. No prerequisite.
Practical problems of nutrition, including food requirements, food selection, and food habits. The relation of nutrition to health. Open to both men and women, except home economics majors. Maximum credit in Home Economics 3 and 4A is four units. A general education course in family life education or in practical arts in the area of literature, philosophy, and the arts.

4B. Nutrition Laboratory (1) II
Three hours of laboratory.
Prerequisite: Limited to students in the nursing program.
Principles of nutrition applied to food preparation, meal planning, and special diets.

***15. Clothing and Textiles (3) I, II**
Six hours. No prerequisite.
Commercial patterns and their adaptation; fitting and construction, primarily with cotton material. Selection and care of textiles. Wardrobe planning and buying practices. Good grooming. A general education course in family life education and in practical arts in the area of literature, philosophy, and the arts.

40. Budgeting the Family Income (2) I, II
Two lectures. No prerequisite.
Family buiying problems; finance planning, accounting; consumer credit, investments and control of property.

41. Home Care of the Sick. (1) II
One lecture. No prerequisite.
Family health; mother and baby care; safety in the home.

42. Problems of Family Living (2) I
Two lectures. No prerequisite.
The activities of the family and the functions of the homemaker in modern society; the individual's contribution to successful family living.

43. Household Equipment (2) I, II
Three hours. No prerequisite.
Selection, methods of operation, and care of household appliances. The testing of various types of equipment for safety, efficiency, and cost of operation. Efficient kitchen arrangement.

***70. Children in the Home (2) I, II**
Two lectures and one hour of observation. No prerequisite.
Development during the prenatal period, first 10 years. Nutrition, physical development, and family influences on the young child. A general education course in family life education.

UPPER DIVISION COURSES

100. Advanced Foods (3) I
One lecture and six hours of laboratory.
Prerequisites: Home Economics 3 and Chemistry 2B.
Fundamentals and practices of scientific food preparation. Development of standards in food preparation, meal planning, and service.

101. Family Meals (3) I
Six hours. No prerequisite.
Planning, preparing, and serving of attractive, well-balanced meals for different income levels and for various occasions. Not open to home economics majors.

102. Advanced Nutrition and Dietetics (3) II
Two lectures and three hours of laboratory.
Prerequisite: Home Economics 100.
Principles of nutrition and dietetics as related to individuals and family groups.

103. Quantity Cookery (3) I
One lecture and six hours of laboratory.
Prerequisites: Home Economics 100 and Business Administration 1A.
Application of basic principles to quantity foods, including experiences in planning, purchasing, storage, preparation, serving and cost accounting for institutional food service. Laboratory experience is provided in the campus cafeteria, industrial food services and hospitals.

104. Institutional Food Organization and Management (3) II
Two lectures and three hours of laboratory.
Prerequisite: Home Economics 103.
Study of problems involved in the organization of food service units, problems of administration, cost of food service, specifications, operation and care of equipment for institutions, and routing of work. Special projects and field trips.

115. Advanced Clothing (3) I, II
Six hours.
Prerequisite: Home Economics 15.
Fitting and construction processes applied to wool, silk, and synthetics, emphasizing fundamental principles of handling.

116. Advanced Clothing Design (3) II
Six hours.
Prerequisite: Home Economics 115.
Principles of tailoring; planning and construction of coats and suits.

117. Clothing Selection (3) I
Three lectures. No prerequisite.
Appropriate clothing for the individual and the family. Basic art principles, fashion trends, history of costume, buying practices; current legislation in textiles and clothing.

130. Family Housing (2) I
One lecture and three hours of laboratory.
Prerequisites: Home Economics 40 and Art 6A. Available to nonmajors without prerequisite.
Choosing and furnishing a home from the standpoint of economy, comfort, and beauty.

131. Home Furnishing Laboratory (2) II

One lecture and three hours of laboratory.

Prerequisites: Home Economics 15 and credit or registration in 130. Available to nonmajors without prerequisite.

Simple upholstering techniques; finishing furniture and interior woodwork. Student supplies his own tools, furniture, and fabrics.

***135. Marriage and the Family (3) I, II** (Same course as Sociology 135)

Three lectures. No prerequisite.

Background factors predictive of happy and successful marriages; principal areas of adjustment in marriage; parent-child problems; the changing adolescent; causes and results of divorce; the family of tomorrow. A general education course in family life education. Not open to students with credit for Sociology 35, 135, or other course in marriage and family.

***150. Home Management (3) I, II**

Three lectures. No prerequisite.

Efficient management of the home; family co-operation, establishment of goals, and productive use of money, time and energy. Open to both men and women. A general education course in family life education.

151. Home Management Laboratory (3) I, II

Five weeks' residence in a family-size unit.

Prerequisites: Home Economics 100 and 150; consent of the instructor; and departmental approval.

Practical applications and evaluative experience in home management and family living.

160. Merchandise Analysis (3) II (Same course as Business Administration 160)

Three lectures. No prerequisite.

Characteristics, merits, limitations, care, and selling points of the more important textile and nontextile products. Stress on manufacturing processes as they affect consumer demands. Not open to home economics majors. Not open to students with credit for Business Administration 160.

166. Honors Course (Credit to be arranged) I, II

Refer to the Honors Program.

170. Child Development Laboratory (2) II

One lecture and discussion and two hours of observation and participation.

Prerequisite: Home Economics 70 or consent of the instructor.

Observation of young children; participation in child and parent education.

180. Demonstration Methods (1) II

One lecture.

Prerequisite: Nine units in home economics courses.

Organizing materials and acquiring techniques for demonstrations; observation and evaluation of professional demonstrations.

181. Materials and Techniques for Teaching Home Economics (2) II

Two hours.

Prerequisite: Education 121C or concurrent registration.

Development and use of audio-visual and other instructional materials.

199. Special Study (1-6) I, II

Individual study. Six units maximum credit.

Prerequisite: Consent of the instructor.

GRADUATE COURSES

200. Seminar (3) I, II

Prerequisite: Home economics major.

Seminars are offered in each of the following fields of home economics. None of the fields may be repeated for credit.

A. Food and Nutrition
B. Home Management and Family Economics
C. Textiles and Clothing
D. Home Economics Education and Organization
E. Child Care and Development

298. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of the instructor.

HUMANITIES

IN THE DIVISION OF HUMANITIES

Faculty assigned to teach courses in humanities are drawn from departments in the Division of the Humanities.

Through the Division of Humanities, three areas of directed study are made available to students who wish to organize and correlate their course work beyond the minimum requirements for the liberal arts degree.

Curricula are offered in American studies, European studies, and in Humanities. These curricula are made possible through a guided selection of courses within the major and minor fields and additional courses in related fields.

AMERICAN STUDIES CURRICULUM

The program in American Studies is designed for the undergraduate student who wishes to earn a liberal arts degree with a concentration in American Studies. The program stresses the American heritage, in both its uniqueness and its debts to other societies. The curriculum centers in American history and literature, and includes relevant fields, outside as well as inside the Division of Humanities.

Major and Minor Combinations. A departmental major is required in history (with concentration in American history) or in English (with concentration in American literature). A minor, to be approved by the faculty adviser in American Studies, is required, and may be taken in any department of the college which offers an appropriate grouping of courses. Knowledge of one foreign language is required, as specified in the departmental major.

Within the scope of the American Studies program, the English-Social Science or the Social Science-English major-minor combination, as defined by the state for a general secondary teaching credential, may be arranged in consultation with the adviser for the program.

Course Requirements and Recommendations. Arrangement of courses in the American Studies curriculum must conform to the following pattern:

	Units
I. Forty-two units in courses on American culture, with from 12 to 18 units in each of the following fields:	42
(a) History of the United States	
(b) American literature and philosophy	
(c) The United States in the social sciences of anthropology, economics, geography, political science, and sociology	
Courses will be selected from approved lists, with approval of the adviser in American Studies.	
II. Fifteen units of courses in the foreign backgrounds of American civilization, as recorded and interpreted by history, literature, philosophy, the arts, and the social sciences	15
Courses will be selected from approved lists, with approval of the faculty adviser in American Studies.	
III. Humanities 198, Integration in the Humanities	3
Total course requirements	60

The student will file with the Evaluations Office a master plan approved by the faculty adviser in American Studies.

EUROPEAN STUDIES CURRICULUM

Specialization in European Studies beyond the requirements for a departmental liberal arts degree is available within the Division of Humanities. The largest groupings of courses are in the departments of Foreign Languages and History, and in Comparative Literature, and supporting courses are offered regularly by other departments and other divisions of the college. The extended curriculum in

European Studies provides (1) the basis for a superior understanding of European civilization, (2) a foundation for graduate work in the major departments, and (3) preparation for residence in continental Europe.

Major and Minor Combinations. A departmental major is required in history (with a concentration upon European history), or in French, Spanish or Romance Languages. A minor is required in comparative literature, economics, English, French, geography, German, history, political science, or Spanish. The major and minor must not both be taken in foreign languages, but a reading and speaking knowledge of at least one European language besides English is required.

Course Requirements	*Units*
I. A minimum of 42 upper division units, including a departmental major as explained above and one or two departmental minors, selected with the approval of a faculty adviser for the European Studies curriculum	42
II. Humanities 198, Integration in the Humanities	3
III. A minimum of 70 units, in either the lower or upper division, distributed as follows: (a) Literature, philosophy, and the fine arts in continental Europe (no fewer than 12 units) (b) European historical development (no fewer than 12 units) (c) European geographical, governmental, and economic conditions (no fewer than 6 units) (d) Foreign languages (no fewer than 16 units, or the equivalent, in one language)	70
A list of approved courses, including options in general education, will be issued annually	
Total course requirements	115

The student will file a master plan with the Evaluations Office approved by a faculty adviser in European studies. In order to complete this curriculum, it is advisable that the master plan be made not later than the end of the freshman year.

HUMANITIES CURRICULUM

The intensive program in humanities provides a course of study which gives a comprehensive view of the development of contemporary civilization, with practice in critical thinking and careful expression. The program encourages extensive reading in history, literature, and philosophy, with oral and written discussion.

Specific Requirements and Recommendations

I. A major in one of the departments of the Division of Humanities, consisting of 24 upper division units and the required introductory courses, plus a minor if required by the major department. Knowledge of one foreign language is required, as specified in the departmental major.

II. Twelve or more upper division units in related fields, selected with approval of the faculty adviser for the curriculum. (May include courses in the minor, if appropriate.)

III. The adviser will assist the student who undertakes this program to distribute his course work among the following areas:
  (a) The Origins of Western Civilization: Greek and Roman, Hebrew, Medieval.
  (b) Western Civilization, 1500-1900; Continental, British, and American.
  (c) Contemporary Civilization.
  (d) Type courses concerned with more than one period; comparative study of Asian Civilization; linguistics and composition; theory.

IV. Humanities 198, Integration in the Humanities (3 units).

The student will file with the Evaluations Office a master plan approved by the adviser for the humanities curriculum.

LOWER DIVISION COURSES

42. French Civilization (2) I
(Same course as French 40)
Two lectures. No prerequisite.
The major currents and characteristics of French culture, as expressed through the centuries in literature, art, philosophy, music, and science. Conducted in English. Not open to students with credit in French 40 or 15.

43. French Civilization (2) II
(Same course as French 41)
Two lectures. No prerequisite.
Continuation of Humanities 42. Not open to students with credit in French 41 or 16.

44. German Civilization (2) I
(Same course as German 40)
Two lectures. No prerequisite.
The major currents and characteristics of German culture, as expressed through the centuries in literature, art, philosophy, music, and science. Conducted in English. Not open to students with credit in German 40 or 15.

45. German Civilization (2) II
(Same course as German 41)
Two lectures. No prerequisite.
Continuation of Humanities 44. Not open to students with credit in German 41 or 16.

46. Spanish Civilization (2) I
(Same course as Spanish 40)
Two lectures. No prerequisite.
The major currents and characteristics of Spanish culture, as expressed through the centuries in literature, art, philosophy, music, and science. Conducted in English. Not open to students with credit in Spanish 40 or 15.

47. Spanish Civilization (2) II
(Same course as Spanish 41)
Two lectures. No prerequisite.
Continuation of Humanities 46. Not open to students with credit in Spanish 41 or 16.

48-S. European Civilization (3) Summer
No prerequisite.
A study of the civilization of Europe through a conducted travel tour. (Formerly offered as General Culture 17-S. Not open to students with credits in this course.)

UPPER DIVISION COURSES

138. Introduction to Aesthetic Appreciation (1) I
(Same course as Comparative Literature 138)
One lecture. No prerequisite.
Major forms of expressions and aesthetic experience in art, music, and literature, presented by an interdepartmental staff through lectures, demonstration, and panel discussions. Not open to students with credit in Comparative Literature 138 or the course of the same title offered as Aesthetics 138.

142. French Civilization (2) I
(Same course as French 140)
Two lectures. No prerequisite.
An advanced course in French culture of the past and present, with emphasis on the arts, philosophy, and literature. Lectures, class discussions, outside readings, written reports on individual topics. Conducted in English. Not open to students with credit in French 140 or 115.

143. French Civilization (2) II
(Same course as French 141)
Two lectures. No prerequisite.
Continuation of Humanities 142. Not open to students with credit in French 141 or 116.

144. German Civilization (2) I
(Same course as German 140)
Two lectures. No prerequisite.
An advanced course in German culture of the past and present, with emphasis on the arts, philosophy, and literature. Lectures, class discussions, outside readings, written reports on individual topics. Conducted in English. Not open to students with credit in German 140 or 115.

145. German Civilization (2) II
(Same course as German 141)
Two lectures. No prerequisite.
Continuation of Humanities 144. Not open to students with credit in German 141 or 116.

146. Spanish Civilization (2) I
(Same course as Spanish 140)
Two lectures. No prerequisite.
An advanced course in Spanish culture of the past and present, with emphasis on the arts, philosophy, and literature. Lectures, class discussions, outside readings, written reports on individual topics. Conducted in English. Not open to students with credit in Spanish 140 or 115.

147. Spanish Civilization (2) II
(Same course as Spanish 141)
Two lectures. No prerequisite.
Continuation of Humanities 146. Not open to students with credit in Spanish 141 or 116.

148-S. European Civilization (3) Summer
A study of the civilization of Europe through a conducted travel tour. (Formerly offered as General Culture 117-S. Not open to students with credit in this course.)

166. Honors Course (Credit to be arranged) I, II
Refer to the Honors Program.

170. The Humanities and Modern Man (1) Irregular
Lectures open to the public. May be repeated for a total of three units.
Weekly lectures on literature, language, philosophy, and cultural history. Reading and reports required of students enrolled for credit.

198. Integration in the Humanities (3) I, II
(Offered 1960-61)
Three lectures.
The investigation of topics common to two or more departments, with oral and written reports. Required of all senior majors in divisional programs in humanities, and open to seniors with majors in English, foreign languages, history, and philosophy.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisites: A major within the Division of Humanities, senior standing, and consent of the instructor.

INDUSTRIAL ARTS

IN THE DIVISION OF PHYSICAL SCIENCES

Professor: Phillips, K. (Chairman)
Associate Professors: Anderson, W. C.; Luce
Assistant Professors: Ford, W. B.; Irgang; McLoney; McMullen; Thiel
Instructor: O'Dell

Courses in industrial arts lead to the following objectives: (1) a major or minor in arts and sciences: (2) a teaching major or minor for several of the teaching credentials; and (3) general education and individual interests. Many of the courses will prove valuable to students desiring practical shop experience on an elective basis.

A major in industrial arts is offered with the A.B. degree in *arts and sciences.* The following majors are offered in *teacher education:* a teaching major with the A.B. degree and special secondary credential and a teaching major leading to the general secondary credential in the postgraduate year. Courses in the industrial arts major for the bachelor's degree are in addition to 45 units in general education courses.

Students taking an industrial arts major are not required to complete a minor for the bachelor's degree. Students who plan to take the general secondary credential with a major in industrial arts are advised to include in the undergraduate program a teaching minor for the credential.

A minor in industrial arts is offered in *arts and sciences.* A teaching minor in industrial arts is offered in *teacher education* for the general elementary, kindergarten-primary, junior high school, and general secondary credentials.

MAJOR IN ARTS AND SCIENCES

Lower Division. Industrial Arts 11, to be taken at the beginning of the major; five courses to be selected from Industrial Arts 21, 31, 51, 61, 71, and 81 (17 units). Art 6A, which is a prerequisite for certain upper division courses, may be counted in general education.

Upper Division. 24 upper division units to include nine units in *each of two* of the following fields: industrial drawing, general metalworking, general woodworking, electricity-radio, transportation, or graphic arts; and six units selected from the areas just mentioned, or from handicraft courses, photographic courses, or the general shop sequence.

MINOR IN ARTS AND SCIENCES

A minor in industrial arts is offered in *arts and sciences.* The minor consists of 20 units in industrial arts to include Industrial Arts 11, 21, and 123, and one lower division and one upper division course in *each of two* of the following fields: general woodworking, general metalworking, electricity-radio, transportation, and graphic arts. Electives should be chosen in consultation with the department chairman.

MAJORS IN TEACHER EDUCATION

Special Secondary Credential in Industrial Arts

Special Secondary Credential in Industrial Arts. Students taking this credential must complete a teaching major in industrial arts and additional requirements in professional education courses.

Requirements in the Major. The teaching major is the same as the industrial arts major in arts and sciences. Refer to the description above.

Professional Courses in Teacher Education. 22 upper division units to include Education 100, 110, 120, 180, 121D, and Health Education 151.

General Secondary Credential

Major for the General Secondary Credential. A teaching major in industrial arts is offered for the general secondary credential. Students may complete requirements for this major and the general secondary credential in one of the following ways:

(1) By taking the special secondary credential in industrial arts with the A.B. degree; completing requirements in a teaching minor for the general secondary credential; and completing other credential requirements in a postgraduate year, to include three graduate units in Industrial Arts 200 and one to three additional units in upper division courses selected with approval of the department chairman.

(2) By completing the industrial arts major in arts and sciences with the A.B. degree, a teaching minor for the general secondary credential, and the credential requirements in a postgraduate year, to include three graduate units in Industrial Arts 200 and one to three additional units in upper division courses selected with approval of the department chairman.

Refer to the section of the catalog on Professional Curricula in Teacher Education for a description of requirements in the postgraduate year.

MINORS IN TEACHER EDUCATION

General Secondary Credential

Minor for the General Secondary Credential. A teaching minor in industrial arts is offered for the general secondary credential. This minor, which may be used for the A.B. degree, consists of a minimum of 21 units to include the following courses: Lower division: Industrial Arts 11, 21, and nine units to be selected from at least three of the following courses: Industrial Arts 31, 51, 61, 71, and 81. Upper division: Industrial Arts 123 and four to six units of upper division elective courses in industrial arts.

Junior High School Credential

Minor for the Junior High School Credential. This minor is the same as the minor in arts and sciences.

General Elementary and Kindergarten-Primary Credential

Minor for the General Elementary and Kindergarten-Primary Credentials. This minor is the same as the minor in arts and sciences.

THE MASTER'S DEGREE

The master of arts degree for teaching service with a concentration in industrial arts is offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

LOWER DIVISION COURSES

***5. General Education Shop (3) I, II**
One lecture and six hours of laboratory.

A course in practical arts utilizing the tools and materials of the general metalworking area. Activities include individual projects, field trips, and audiovisual materials. May be counted toward general education requirements in the area of literature, philosophy, and the arts.

***6. General Education Shop (3) I, II**
One lecture and six hours of laboratory.
Prerequisite: Consent of instructor.

A course in practical arts utilizing the tools and materials of industrial arts. Activities include individual projects, field trips, and audiovisual materials. May be counted toward general education requirements in the area of literature, philosophy, and the arts.

11. Orientation to the Industrial Arts Profession (2) I, II
Two lectures.

Professional requirements and modern trends in industrial arts education. Problems of teaching and shop organization in the various fields of specialization, directed observation. Required of all industrial arts majors during their first semester.

21. Industrial Drawing (3) I, II
One lecture and six hours of laboratory.

Development of the skills of industrial drawing. Experience in sketching, architectural drafting, mechanical drawing, sheetmetal layout, design, planning, blackboard drawing, mapping and other forms of graphic presentation.

31. General Metalworking (3) I, II
One lecture and six hours of laboratory.

Development of the skills of general metalworking. Experience in machine shop practice, welding, bench metal, art metal, forge, foundry and sheetmetal.

51. General Woodworking (3) I, II
One lecture and six hours of laboratory.

Development of the skills of general woodworking. Experience in cabinetmaking, woodturning, patternmaking, carpentry, boatbuilding, and finishing.

61. Electricity-Radio (3) I, II
One lecture and six hours of laboratory.
Development of the skills for and the understandings of the electricity-radio area. Experience with electrical and radio principals and their application.

71. Transportation (3) I, II
One lecture and six hours of laboratory.
Development of the skills of transportation machinery maintenance. Experience in the maintenance of equipment for land, sea and air transportation and an understanding of the mechanical principles involved.

81. Graphic Arts (3) I, II
One lecture and six hours of laboratory.
Development of the skills of graphic arts. Experience in hand composition, presswork, and other activities such as bookbinding, photography, silk screen, relief and intaglio printing and other duplicating processes. An understanding of the composition of papers and inks.

***85. Introduction to Photography (3) I, II**
One lecture and six hours of laboratory.
A consideration of photographic optics and chemistry; nature of light and image formation; photographic emulsions, exposure and development. Composition and lighting. A course in practical arts which may be counted toward general education requirements in the area of literature, philosophy, and the arts, unless used as part of the major in industrial arts. Not open to students with credit for Journalism 50.

UPPER DIVISION COURSES

101. Handicrafts for Teachers (3) I, II
One lecture and six hours of laboratory.
Prerequisites: Consent of the instructor and previous shop experience.
For industrial arts or recreational students who desire to teach handicrafts. Skills in handicrafts are emphasized and directed toward the instructional process.

102. Materials and Techniques for Teaching Handicrafts (3) I, II
One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 101.
More advanced techniques of handicrafts. Development of audiovisual aids, projects, and resource material for handicrafts. Physical setting, organization, and other pertinent problems. A course of instruction is prepared.

105-S. Construction Activities for Teachers (3) Summer
One lecture and six hours of laboratory.
Use of common hand tools in construction of teaching aids. Preparation of materials for classroom use in arithmetic, reading, science, social studies, and other curriculum areas. Not open to Industrial Arts majors.

111. General Shop for Teachers (3) I, II
One lecture and six hours of laboratory.
Prerequisites: Consent of the instructor and previous shop experience.
For industrial arts students who desire to teach general shop. Skill in the general shop is emphasized and directed toward the instructional process.

112. Materials and Techniques for Teaching General Shop (3) I, II
One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 111.
More advanced techniques for the general shop. Development of audiovisual aids, projects, and resource material for teaching general shop. Physical setting, organization, and other pertinent problems. A course of instruction is prepared.

121. Industrial Drawing (3) I, II
One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 21, or consent of instructor.
Further experience in sketching, architectural drafting, mechanical drawing, sheetmetal layout, design, planning, blackboard drawing, mapping, and other forms of graphic presentation. A high level of performance is expected.

122. Industrial Drawing for Teachers (3) I, II
One lecture and six hours of laboratory.
Prerequisites: Industrial Arts 121 and Art 6A.
For industrial arts students who desire to teach industrial drawing. Advanced skills are developed and directed toward the instructional process. Emphasis is placed on the junior and senior high school program.

123. Materials and Techniques for Teaching Industrial Drawing (3) I, II
Two lectures and three hours of laboratory.
Prerequisite: Education 100, or consent of instructor.
More advanced techniques of industrial drawing. Development of audiovisual aids, projects, and resource material for industrial drawing. Physical setting, organization, and other pertinent problems. A course of instruction is prepared.

131. General Metalworking (3) I, II
One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 31.
Further experience in machine shop practice, welding, bench metal, art metal, forge foundry, and sheetmetal. A high level of performance is expected.

132. General Metalworking for Teachers (3) I, II
One lecture and six hours of laboratory.
Prerequisites: Industrial Arts 131 and Art 6A.
For industrial arts students who desire to teach metalworking. Advanced skills are developed and directed toward the instructional process. Emphasis is placed on the junior and senior high school program.

133. Materials and Techniques for Teaching General Metalworking (3) I, II
One lecture and six hours of laboratory.
Prerequisites: Industrial Arts 132 and Education 100.
More advanced techniques of metalworking. Development of audiovisual aids, projects and resource material for metalworking. Physical setting, organization and other pertinent problems. A course of instruction is prepared.

151. General Woodworking (3) I, II
One lecture and six hours of laboratory.
Further experience in cabinetmaking, woodturning, patternmaking, carpentry, boatbuilding, and finishing. A high level of performance is expected.

152. General Woodworking for Teachers (3) I, II
One lecture and six hours of laboratory.
Prerequisites: Industrial Arts 151 and Art 6A.
For industrial arts students who desire to teach woodworking. Advanced skills are developed and directed toward the instructional process. Emphasis is placed on the junior and senior high school program.

153. Materials and Techniques for Teaching General Woodworking (3) I, II
One lecture and six hours of laboratory.
Prerequisites: Industrial Arts 152 and Education 100.
More advanced techniques of woodworking. Development of audiovisual aids, projects, and resource material for woodworking. Physical setting, organization, and other pertinent problems. A course of instruction is prepared.

161. Electricity-Radio (3) I, II
One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 61.
Further experience with electrical and radio principles and their applications. A high level of performance is expected.

162. Electricity-Radio for Teachers (3) I, II
One lecture and six hours of laboratory.
Prerequisites: Industrial Arts 161 and Art 6A.
For industrial arts students who desire to teach electricity-radio. Advanced skills are developed and directed toward the instructional process. Emphasis is placed on the junior and senior high school program.

163. Materials and Techniques for Teaching Electricity-Radio (3) I, II
One lecture and six hours of laboratory.
Prerequisites: Industrial Arts 162 and Education 100.
More advanced techniques for electricity and radio. Development of audiovisual aids, projects, and resource material for electricity and radio. Physical setting, organization, and other pertinent problems. A course of instruction is prepared.

171. Transportation (3) I, II
One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 71.
Further experience in the maintenance of equipment for land, sea, and air transportation, and development of an understanding of the mechanical principles involved. A high level of performance is expected.

172. Transportation for Teachers (3) I, II
One lecture and six hours of laboratory.
Prerequisites: Industrial Arts 171 and Art 6A.
For industrial arts students who desire to teach transportation. Advanced skills are developed and directed toward the instructional process. Emphasis is placed on the junior and senior high school program.

173. Materials and Techniques for Teaching Transportation (3) I, II
One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 172 and Education 100.
More advanced techniques of transportation machinery maintenance. Development of audiovisual aids, projects, and resource material for transportation. Physical setting, organization, and other pertinent problems are discussed. A course of instruction is prepared.

181. Graphic Arts (3) I, II
One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 81.
Further experience in hand composition, presswork, and other activities such as bookbinding, photography, silk screen, relief and intaglio printing, and other duplicating processes. A high level of performance is expected.

182. Graphic Arts for Teachers (3) I, II
One lecture and six hours of laboratory.
Prerequisites: Industrial Arts 181 and Art 6A.
For industrial arts students who desire to teach graphic arts. Advanced skills are developed and directed toward the instructional process. Emphasis is placed on the junior and senior high school program.

183. Materials and Techniques for Teaching Graphic Arts (3) I, II
One lecture and six hours of laboratory.
Prerequisites: Industrial Arts 182 and Education 100.
More advanced techniques of graphic arts. Development of audiovisual aids, projects, and resources material for graphic arts. Physical setting, organization, and other pertinent problems. A course of instruction is prepared.

185. Photography for Teachers (3) I, II
One lecture and six hours of laboratory.
Designed for more mature students to learn photographic skills useful in teaching.

186. Advanced Photography (3) I, II
One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 85 or equivalent.
A consideration of advanced negative control, projection printing techniques, composition and editorial content, architectural and illustrative photography, and flood photoflash techniques.

190. Experimental Shop (1 or 2) I, II
Individual shopwork on complex projects on an experimental basis.
Prerequisite: Consent of the instructor. May be repeated with consent of the instructor.

193. Industrial Arts Organization and Management (2) I, II
Two lectures.

Study of the organization of industrial arts in secondary schools, review of project requirements and methods of developing student participation in shop management.

194. Recent Trends in Industrial Arts Education (2) I, II
Two lectures.

Survey of current trends and practices in the field of industrial arts in secondary education. There will be opportunity for individual work on related problems of interest to members of the class.

198. Senior Project (3) I, II
One lecture and six hours of laboratory.
Prerequisite: Consent of the instructor.

Each student will work on a project in a selected industrial arts activity area. Oral progress reports will be made and a final written report is required.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of the instructor.

GRADUATE COURSES

200. Seminar (3) I, II
Three hours of lecture. May be repeated with new materials for additional credit.

An intensive study of one phase of industrial education: (a) development of the industrial arts curriculum; (b) shop organization and management; (c) supervision and administration; (d) evaluation; (e) problems of shop planning; (f) history and philosophy of industrial education.

201. Advanced Teaching Problems (3) I, II
Prerequisites: Teaching experience in area selected and consent of the instructor. May be repeated with new materials for additional credit.

Materials and advanced techniques of teaching specific activity areas, such as (a) industrial drawing; (b) general metalworking; (c) general woodworking; (d) electricity-radio; (e) transportation; (f) graphic arts; (g) photography; (h) comprehensive general shop. Stress on project design and visual materials.

267. Field Work in Industrial Arts (3) I, II
Prerequisites: Consent of the instructor, Industrial Arts 200 and industrial arts teaching experience. May be repeated with different material to a total of six units of credit.

Application of the principles of shop organization, management and planning in reference to the objectives of industrial arts in development of school programs.

290. Bibliography (1) I, II
Exercise in the use of basic reference books, professional literature, and specialized bibliographies, preparatory to the writing of a master's thesis.

298. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Permission of staff; to be arranged with department chairman and instructor.

299. Thesis (3) I, II
Prerequisites: An officially appointed thesis committee and advancement to candidacy.

Guidance in the preparation of a project or thesis for the master's degree.

JOURNALISM

IN THE DIVISION OF SOCIAL SCIENCES

Professors: Julian; Wimer
Assistant Professor: Johnson, D. B. (Chairman)
Lecturer: Harvey, W. E.

A major in journalism is offered with the A.B. degree in *arts and sciences.* Courses in the major are in addition to 45 units in general education courses.

Journalism majors are not required to complete a minor for the bachelor's degree; however, several minors are available to increase the scope of training for careers in journalism. Available are those in business administration for students interested in advertising or newspaper management, and in speech arts (broadcasting emphasis) for those interested in radio and television news. Students planning to enter public relations should work out with their advisers a pattern of courses from other departments to supplement requirements for a major in journalism.

MAJOR

The major in journalism consists of 32 units to include the following: Lower division: Journalism 50, 51A and 51B (9 units); upper division: A minimum of 24 upper division units in journalism to include Journalism 102, 117, 121, 151, and one year's enrollment in 192 (or 92) in reporting, editing, make-up, or photography, or the equivalent in professional experience.

MINOR

A minor in journalism is offered in arts and sciences. The minor consists of 15 to 22 units to include Journalism 49, 51A-51B, 102, and 151.

LOWER DIVISION COURSES

49. Introduction to Mass Communications (3) I
A survey of the work of mass media, their interrelationships, and the services they perform for society; common problems and responsibilities of the mass media; training and background needed in different media.

50. News and Feature Photography (3) I, II
Two lectures and three hours of laboratory.
An elementary course designed primarily for students of journalism and public relations; experience with professional photographic equipment and film processing; contact and projection printing; emphasis on composition and news value of pictures. Not open to students with credit for Industrial Arts 85.

51A. News Reporting (3) I
Two lectures and three hours of laboratory.
Prerequisites: Sophomore standing or consent of instructor and ability to type.
Study of reporting techniques, with intensive laboratory practice in gathering, evaluating, and writing the basic types of news stories.

51B. Advanced News Reporting (3) II
Two lectures and three hours of laboratory.
Prerequisite: Grade of C or better in Journalism 51A.
Intensive laboratory practice in writing the more complex types of news stories. Work includes some reporting for the campus newspaper, *The Aztec.*

53. Advanced News and Feature Photogrphy (2) I
One lecture and three hours of laboratory.
Prerequisite: Journalism 50 or equivalent.
Continuation of Journalism 50.

92. Newspaper Production (1-3) I, II
Three hours of laboratory required for each unit. Total credit in Journalism 92, 93, 192, and 193 limited to eight units.
Special work in journalism by arrangement with the instructor. Includes reporting, editing, taking and processing pictures, working with the printer, proofreading in production of *The Aztec.*

93. Yearbook and Magazine Production (1-3) I, II
Three hours of laboratory required for each unit. Total credit in Journalism 92, 93, 192, and 193 limited to eight units.
Special work in yearbook and magazine production by arrangement with the instructor. Includes editing and photographic work on *Del Sudoeste* and campus magazines.

UPPER DIVISION COURSES

101. Magazine Article Writing (3) II
Prerequisites: Junior standing and consent of instructor.
Practice in gathering material and writing articles for specialized areas, with emphasis on the business press. Production of eight articles and marketing of at least one article required.

102. Law of Mass Communications (3) II
Study of libel, defamation, privacy, censorship, advertising laws, postal regulations, and constitutional guaranties affecting press, radio, television; rights and responsibilities of communicators in reporting public affairs.

103. Picture Editing (2) II
Editorial problems of newspaper and magazine illustration; picture selection, cropping, captioning, layout; the picture story; use of charts, diagrams, cartoons, maps; picture sources. Students will receive credit for work on the student publications.

104. Radio and Television News (3) I (Same course as Speech Arts 187)
Gathering, writing, and editing news in special forms required by radio and television; processing wire service copy, still pictures, and kinescopes; filming, editing, and scripting news on motion pictures; using recorders to report special events. Not open to students with credit for Speech Arts 187.

105. Editorial Writing (3) I
Training in the principles and policies of editorial composition for mass communications media.

107. Technical Writing (3) II
Reporting technical developments in nontechnical language. A course in writing and editing primarily for nonmajors in journalism.

117. History of Mass Communications (3) I
American journalism from colonial times to the present, with special attention to radio and other mass media which have entered the news and entertainment field; the relation of their development to society.

121. Current Problems in Mass Communications (3) II
Forces affecting American mass communications today: Government restrictions, economics, pressure groups, censorship, mechanical developments, interrelationships of the media and society; professional ethics.

122. Public Opinion Measurement (3) (Same course as Psychology 122)
The history, methods, and problems of public opinion and attitude measurement. Emphasis will be placed upon the polling of consumers and voters. Students will be given field experience. Not open to students with credit for Psychology 122.

132. Propaganda and Public Opinion (3) II
(Same course as Political Science 122)
A study of the forces which mold the American public mind, the practice of propaganda, a description and analysis of public relations, pressure groups and their effect in American public life. Not open to students with credit for Political Science 122.

144. Reporting of Public Affairs (3) II
Prerequisites: Journalism 51A, 51B, and 102.
Coverage of the city hall, courthouse, police headquarters, federal agencies, courts, and other public and political centers.

145. Comparative World Journalism (3) I
Problems and practices in world news coverage, establishing and maintaining channels of communication for the mass media, barriers to maintenance of freedom of information. Study of the responsibility of the mass media, particularly newspapers, in international affairs.

151. News Editing (3) I
Three lectures and two additional hours of laboratory.
Prerequisites: Journalism 51A and 51B.
Editing copy, writing headlines, making up pages, handling telegraph copy.

152. High School Journalism (3) II
Methods of conducting high school journalism classes. Editorial, business and mechanical aspects of school publication work, with emphasis on copy editing, headline writing and layout. Not open to journalism majors.

166. Honors Course (Credit to be arranged) I, II
Special study open to members of the Honors Program in journalism. Refer to the Honors Program.

180. Public Relations (3) (Same course as Business Administration 155)
Principles, methods, and objectives in the field of public relations; evaluation of the "publics" of institutions and industry; case studies of public relations problems. Not open to students with credit for Business Administration 155.

183. Problems in Public Relations (3) II
Prerequisite: Journalism 180 or Business Administration 155.
Current public relations problems of industry, public agencies, and other institutions.

184. Writing for Radio and Television (3) II (Same course as Speech Arts 184)
Prerequisites: Speech Arts 81A or equivalent.
Scripts, documentaries, music, continuity for each program type. Correlates writing with radio and television acting and announcing styles. Program formats. Not open to students with credit for Speech Arts 184.

191A-191B. Internship in Journalism (1-3) I, II
Prerequisites: Journalism 51A, 51B, and consent of instructor.
Prearranged and supervised work on local magazines, city and county newspapers, radio and television stations, and on public relations, publicity, and advertising staffs of civic and business groups. Maximum credit six units.

192. Newspaper Production (1-3) I, II
Three hours of laboratory required for each unit. Total credit in Journalism 92, 93, 192, and 193 limited to eight units.
Special work in journalism by arrangement with the instructor. Includes reporting, editing, taking and processing pictures, working with the printer, proofreading in production of *The Aztec.*

193. Yearbook and Magazine Production (1-3) I, II
Three hours of laboratory required for each unit. Total credit in Journalism 92, 93, 192, and 193 limited to eight units.
Special work in yearbook and magazine production by arrangement with the instructor. Includes editing and photographic work on *Del Sudoeste* and campus magazines.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of instructor.

LANGUAGE ARTS

IN THE DIVISION OF HUMANITIES

A major in language arts is offered with the A.B. degree in *arts and sciences* and in *teacher education.* This major includes courses in the fields of composition, dramatics, journalism, language, literature, radio, television, and speech arts. It is primarily designed for students who plan to take the general secondary credential. Courses in the major are in addition to 45 units in general education courses.

Students electing this major for the bachelor's degree must have completed the following requirements by date of degree candidacy: (1) admission to teacher education, (2) at least eight units in professional education courses, and (3) a minor, other than in English or speech arts, selected from one of the teaching minors for the general secondary credential. At least 15 units in this minor, six units of which must be in courses carrying upper division credit, must be completed for the degree. Students taking the general secondary credential may complete the remaining units for this teaching minor in either the undergraduate or postgraduate program.

LANGUAGE ARTS MAJOR IN ARTS AND SCIENCES

Lower Division. Six units selected from English 50A-50B, 52A-52B, or 60A-60B (or a substitution of two upper division courses selected from English 116A-116B, 118A-118B, 119A-119B, 120A-120B, 126A-126B, or 143A-143B); Journalism 51A; Speech Arts 60A, or 60B, or 55A, or 55B; Speech Arts 81A or 81B (15 units).

Upper Division. 27 upper division units to include English 192; English 106 or 191; English 131, or 132, or 133, or 134; English 117A, or 117B, or 152A, or 152B; Journalism 152; Speech Arts 108A or 108B, 159 and 174; Speech Arts 191, or 192A, or 192B. If the lower division sequence is taken in American Literature the upper division course work in literature should be taken in other areas.

LANGUAGE ARTS MAJOR IN TEACHER EDUCATION

General Secondary Credential

Major for the General Secondary Credential. A teaching major in language arts is offered for the general secondary credential. This major, which has the same requirements as the major in arts and sciences, may be used for the A.B. degree. When this major is used for the general secondary credential, the professional education courses must include, in addition to the standard credential program, the following courses: Education 122 and Education 121 in both English and speech arts, plus a methods course (Education 121) in a teaching minor.

Additional Credential Requirements

Requirements for the general secondary credential include completion of a bachelor's degree, the teaching major in language arts, an appropriate teaching minor for the credential, and the credential requirements in a postgraduate year, to include four to six graduate units to be selected from one 200-numbered course in speech arts and one 200-numbered course in English.

Refer to the section of the catalog on Professional Curricula in Teacher Education for a description of requirements in a postgraduate year.

LATIN

IN THE DIVISION OF HUMANITIES

Professor: Burnett

Major or minor work is not offered in Latin.

LOWER DIVISION COURSES

***1. Elementary (3) I**

Three lectures and one hour of laboratory.

Study of the Latin language and Roman culture, with reading of selected prose passages. A general education course in foreign language.

***2. Elementary (3) II**

Three lectures and one hour of laboratory.

Prerequisite: Latin 1 or one year of high school Latin.

Continuation of Latin 1. A general education course in foreign language.

***3. Intermediate (3) I**

Prerequisite: Latin 2 or two years of high school Latin.

Reading of selected passages emphasizing the contribution of the ancient culture to our own. A general education course in foreign language.

***4. Intermediate (3) II**

Prerequisite: Latin 3 or three years of high school Latin.

Continuation of Latin 3. A general education course in foreign language.

LATIN-AMERICAN STUDIES

IN THE DIVISION OF SOCIAL SCIENCES

A major in Latin-American studies is offered with the A.B. degree in *arts and sciences.* This major provides (1) a basis for a more effective understanding of the problems of international relations in the western hemisphere; (2) a basic education and training for a business or professional career involving understanding of Latin-America; and (3) undergraduate preparation for the comprehensive examinations required for appointment in Foreign Services of the United States Department of State.

High School Preparation

High school students preparing to enter this program should include in the high school course of study three years of study in one foreign language, preferably Spanish or Portuguese. Proficiency in either or both of these languages is indispensable to a successful career in this area of study.

MAJOR IN LATIN-AMERICAN STUDIES

Courses in the major are in addition to 45 units in general education courses, except that 12 units in the social sciences may be counted as general education. Students with this major are not required to complete a minor for the bachelor's degree.

Foreign Language and Area Studies. A reading and speaking knowledge of Spanish or Portuguese is required of students with the major in Latin-American studies. Students are also urged to include the following courses within general education requirements: Art 51, Comparative Literature 104A-104B, and Spanish 141 or Humanities 147.

Lower Division. Six units in *each of three* of the following fields: Anthropology 1 and 2; Economics 1A-1B; Geography 1 and 2; History 8A-8B; and Political Science 1A-1B (18 units).

Upper Division. 30 upper division units from the fields named above, to include 12 units from *one* field, six units from *each of two* additional fields, and six units from *any of the fields.* Courses strongly recommended: Economics 190 and 195; Geography 123 and 124; History 161 and 162; and Political Science 175 and 182. Recommended selection of courses to complete the major include Anthropology 151B, Geography 121, History 173A-173B, and Political Science 170A-170B and 171. Any variation in the student's program must be with the approval of the adviser.

LIBRARY SCIENCE

IN THE DIVISION OF SOCIAL SCIENCES

Professor: Stone, John Paul

Major or *minor* work is not offered in library science.

LOWER DIVISION COURSES

***10. Use of the Library (2) I, II**

The chief object is to give a working knowledge of some of the resources of the library which every teacher and student should understand—the decimal classification, the card catalog, periodical indexes, and the most important reference books, together with some instruction in the preparation of biliographies. The course will be a requirement of those students added to the library's staff of student assistants, although it will not prepare the student to become a librarian. A general education course in practical arts, in the area of literature, philosophy, and the arts.

LIFE SCIENCE

IN THE DIVISION OF LIFE SCIENCES

A major in life science is offered with the A.B. or B.S. degree in *arts and sciences;* and a major in life science and general science with the A.B. degree is offered in *teacher education.* Courses in the major are in addition to 45 units in general education courses, except that 12 units in the natural sciences may be counted in general education. Students majoring in life science are not required to complete a minor for the bachelor's degree. Students who plan to take the general secondary credential should include a teaching minor for the credential in the undergraduate program.

A minor in life science is offered in *arts and sciences* and a teaching minor in life science and general science is offered for the general secondary credential in *teacher education.*

LIFE SCIENCE MAJOR

Major With the A.B. Degree

Lower Division. Biology 5 and 15; Zoology 50 and 51; Botany 50 and 51; Chemistry 2A-2B; Physics 2A-2B.

Upper Division. 27 upper division units in microbiology, biology, botany, and zoology, including Microbiology 101; Biology 101, 110, 155, and 161; and eight units of upper division electives to be selected with approval of the adviser.

Major With the B.S. Degree

Lower Division. Biology 5 and 15; Zoology 50 and 51; Botany 50 and 51; Chemistry 2A-2B; Physicas 2A-2B.

Upper Division. 36 upper division units in microbiology, biology, botany, and zoology, including Microbiology 101, 110, 155, and 161; the remaining units to be selected with the approval of the adviser.

LIFE SCIENCE MINOR IN ARTS AND SCIENCES

A minor in life science is offered in arts and sciences. The minor consists of 15 to 22 units to include Biology 3 and 4, or the equivalent, and a minimum of nine units from courses in the life sciences which carry upper division credit, to be selected with approval of the Chairman of the Division of Life Sciences.

LIFE SCIENCE AND GENERAL SCIENCE MAJORS IN TEACHER EDUCATION

General Secondary Credential

Major for the General Secondary Credential. A teaching major in life science and general science is offered for the general secondary credential. This major may be used for the A.B. degree. Lower division requirements: Biology 5, Zoology 22 and 23; Biology 15; Chemistry 2A-2B; Physics 2A-2B (or with the approval of the departmental adviser, high school physics and college courses in Geology 2 and Physical Science 1). Upper division: 27 upper division units to include Microbiology 101, Biology 110, 155, 161, and 12 units chosen from Botany 114, Zoology 112, 114, 115, 117, 121, Biology 101, and Botany 107.

Additional Credential Requirements

Requirements for the general secondary credential include completion of a bachelor's degree, the teaching major in life science and general science, a teaching minor for the credential selected from an area other than the life sciences, and the credential requirements in a postgraduate year, to include four graduate units which may be met by two semesters chosen from the biology seminars or by one semester of biology seminar and two units of Zoology 298 or Botany 298.

Refer to the section of the catalog on Professional Curricula in Teacher Education for a description of requirements in the postgraduate year.

Junior High School Credential

Major for the Junior High School Credential. A teaching major in general science is offered with the A.B. degree and junior high school credential. For a description of this major, refer to the section of the catalog on General Science.

LIFE SCIENCE AND GENERAL SCIENCE MINOR IN TEACHER EDUCATION

General Secondary Credential

Minor for the General Secondary Credential. A teaching minor in life science and general science is offered for the general secondary credential. This minor, which may be used for the A.B. degree, consists of a minimum of 21 units to include Biology 3 and 4 and Physical Science 1 and 2, or their equivalents (12 units); and nine upper division units to include Biology 160, 161, and Zoology 119-S or Botany 119-S.

OTHER CURRICULA IN THE LIFE SCIENCES

Within the life science majors, curricula are offered for the fields of entomology, fish and game, plant quarantine, and wildlife. Requirements for these curricula are the same as for the B.S. degree in zoology or in botany; the specialization for a particular occupation lies within the upper division electives of the B.S. degree program.

Students in high school planning to enter any of these life science curricula should include in the high school program the following subjects: Elementary algebra, plane geometry, intermediate algebra, trigonometry, chemistry, and physics. Three years of French or German recommended.

Students planning to specialize within the area of the life sciences should consult with the departmental adviser in selection and arrangement of courses.

THE MASTER'S DEGREE

The master of arts degree with a major in biology, the master of arts degree for teaching service in life science with concentrations in biology, botany, microbiology, or zoology, and the master of science degree in applied biology are offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

MATHEMATICS

IN THE DIVISION OF PHYSICAL SCIENCES

Professors: Eagle; Harris; Harvey, A. R.; Riggs (Chairman); Vinograde
Associate Professors: Branstetter; Smith, N. B.; Warren; Willerding
Assistant Professors: Becker, G. A.; Bell; Bone; Burton; Clark; Emerson; Holmes, C. V.; Hursch; Moser; Saltz; Shaw, P.
Instructors: Aldrich; Guidal; Hemminger; MacDonald
Lecturers: Simmons; Marosz

A major and minor in mathematics are offered with the A.B. degree in *arts and sciences*. Teaching majors in mathematics are offered in *teacher education* for the junior high school and general secondary credentials; teaching minors in mathematics are offered for the general elementary, kindergarten-primary, and general secondary credentials.

Courses in the major are in addition to 45 units in general education courses. Students majoring in mathematics are not required to complete a minor for the bachelor's degree; however, completion of a minor is desirable. Students who plan to take the general secondary credential with a major in mathematics are advised to include in the undergraduate program a teaching minor for the credential.

A reading knowledge of French, German or Russian is strongly recommended.

MAJOR IN ARTS AND SCIENCES

Lower Division. Mathematics 40 (unless exempted by examination); Mathematics 50, 51, and 52. Recommended: Physics 4A-4B or 2A-2B-3A-3B; and French, German or Russian.

Upper Division. 24 upper division units in mathematics subject to the approval of a departmental adviser. Six units may be selected from upper division courses in related areas with the approval of the adviser.

MINOR IN ARTS AND SCIENCES

A minor in mathematics is offered in arts and sciences. The minor consists of 15 to 22 units in mathematics, six units of which must be in courses carrying upper division credit. Courses should be selected in consultation with the departmental representative.

MATHEMATICS MAJORS IN TEACHER EDUCATION

General Secondary Credential

Major for the General Secondary Credential. A teaching major in mathematics is offered for the general secondary credential. This teaching major, which may be used for the A.B. degree, is the same as the major in arts and sciences, except that the upper division courses must include an algebra course (150 or 111), a geometry course (105, 106, or 197), a statistics course, and history of mathematics (104).

Additional Credential Requirements

Requirements for the general secondary credential include completion of a bachelor's degree, the teaching major in mathematics, a teaching minor for the credential, and the credential requirements in a postgraduate year, including four graduate units in mathematics (200-numbered) courses.

Refer to the section of the catalog on Professional Curricula in Teacher Education for a description of requirements in the postgraduate year.

Junior High School Credential

Major for the Junior High School Credential. A teaching major in mathematics is offered with the A.B. degree and junior high school credential to students with teaching minors in home economics or industrial arts. Students taking this credential must complete the teaching major and minor and additional requirements in professional education courses.

It is recommended that this credential be taken in combination with the general elementary or special secondary credential. For a description of this program, refer to Combination of Credentials in the section of the catalog on Professional Curricula in Teacher Education. Students wishing to secure the junior high school credential under conditions other than those described above should consult with the Coordinator of Secondary Education.

Requirements in the major. 24 units in mathematics, at least 18 units of which must be in courses carrying upper division credit.

Professional Courses in Teacher Education. 24 upper division units to include Education 100, 110, 120, 180, 121 (methods in the major and minor fields), and Health Education 151.

For additional information on this credential, refer to the junior high school credential in the section of the catalog on Professional Curricula in Teacher Education.

MINORS IN TEACHER EDUCATION

General Secondary Credential

Minor for the General Secondary Credential. A teaching minor in mathematics is offered for the general secondary credential. This minor, which may be used for the A.B. degree, consists of a minimum of 21 units, exclusive of course equivalents, to include the following courses: Lower division: Mathematics 40, or high school equivalent, Mathematics 50 and 51; one course in related areas selected from Astronomy 1, Business Administration 2, Engineering 2 or 21, Physics 4A or 2A; and additional electives in mathematics for a total of 12 lower division units. Upper division: nine units including Mathematics 104 and six upper division units of mathematics electives.

General Elementary and Kindergarten-Primary Credentials

Minor for the general Elementary and Kindergarten-Primary Credential. A teaching minor in mathematics is offered for the general elementary or kindergarten-primary credential. This minor consists of a minimum of 15 units in mathematics, six units of which must be in upper division courses.

THE MASTER'S DEGREE

The master of arts degree with a major in mathematics, the master of arts degree for teaching service with a concentration in mathematics, and the master of science degree in applied mathematics are offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

MATHEMATICS PLACEMENT EXAMINATIONS

All students who expect to enroll in Mathematics 3, 4, 40, or 50 and have not completed prerequisite courses at San Diego State College must take the mathematics placement tests. These tests may be used to satisfy all or part of the prerequisite requirements for these courses and they also serve as a basis for the selection of students for the mathematics honors program. The schedule for these examinations will be posted on the mathematics bulletin board. Provision is also made for these examinations to be taken by the entering freshman or the transfer student prior to registration. Refer to the calendar.

LOWER DIVISION COURSES

A. Basic Mathematics (3) I, II

Fundamentals of mathematics with applications to everyday problems. Required of all students failing the competency examination in mathematics. Not open for credit to students passing this examination. May not be used in the major or minor.

***1. Fundamentals of Algebra (3) I, II**

General ideas and applications of algebra. A general education course in mathematics.

***2. Plane Geometry (3) I, II**

Prerequisite: Math 1.

Fundamentals of plane Euclidean geometry developed by both inductive and deductive processes. A general education course in mathematics.

***3. Intermediate Algebra (3) I, II**

Prerequisite: Math 1 at this college or qualification by examination. Math 2 and 3 or Math 3 and 4 may be taken concurrently.

Review of elementary algebra, exponents, radicals, logarithms, quadratic equations, arithmetic and geometric progressions.

***4. Trigonometry (2) I, II**

Prerequisites: Credit in plane geometry in either high school or college combined with either credit in Math 3 at this college or qualification by examination. Math 3 and 4 or Math 4 and 40 may be taken concurrently.

Numerical and practical aspects of trigonometry.

8. Theory and Use of the Slide Rule (1) I, II

Prerequisites: Math 1 and 2.

Practice in performing the fundamental operations of the slide rule.

9. Use of Desk Calculators (1) II

Prerequisites: Math 1 and 2.

Technique of computation with desk calculators with applications to the sciences.

***10. Mathematics for General Education (3) I, II**

Basic concepts of arithmetic, algebra, and geometry with applications. Recommended for students of elementary education and students whose scores on the competency examination, while exempting them from Mathematics A, indicate a need for further training in mathematics. A general education course in mathematics.

12. Elementary Statistics (3) II

Prerequisite: Math 1.

Tabular and graphical presentation, measures of central tendency and variability, analysis of times series, linear correlation coefficient. Applications from the fields of biology, economics, education, engineering and psychology.

***21. Mathematical Analysis (3) I**

Designed for students who do not intend to prepare for a professional career in physical science or in engineering. Consideration is given to the processes and applications of algebra and trigonometry. A general education course in mathematics. Prerequisite: High school algebra and plane geometry. Not open to students with credit for Math 40.

***22. Mathematical Analysis (3) II**

Prerequisite: Math 21.

A continuation of Mathematics 21 including the concepts and applications of analytic geometry and an introduction to the calculus. A general education course in mathematics. Not open to students with credit for Math 50.

***40. Advanced Algebra and Trigonometry (5) I, II**

Prerequisites: Credit in trigonometry in either high school or college combined with either Math 3 at this college with a grade of C or better, or qualification by examination.

Variation, progressions, complex numbers, De Moivre's theorem, solutions of equations, binomial theorem, determinants, permutations, combinations, probability, inequalities, partial fractions, analytical trigonometry, graphs or trigonometric functions, etc. A general education course.

***50. Analytic Geometry and Calculus (5) I, II**
Prerequisite: Math 40 at this college with grade of C or better, or qualification by examination on subject matter of Math 40.
Topics in analytic geometry, differentiation and integration of algebraic functions. A general education course.

51. Differential and Integral Calculus (4) I, II
Prerequisite: Math 50 with grade of C or better.
Differentiation and integration of the elementary transcendental functions; applications.

52. Differential and Integral Calculus (4) I, II
Prerequisite: Math 51 with grade of C or better.
Infinite series, partial differentiation, differential equations, multiple integrals, applications. Not open to students with credit for Math 117.

60. Introduction to Modern Mathematical Concepts (3) II
Prerequisite: Math 40.
Elementary approach to selected topics from mathematical logic, set theory, probability, matrices, linear programing and theory of games.

UPPER DIVISION COURSES

***104. History of Mathematics (3) I, II**
History of mathematics down to early modern times. A general education course in mathematics.

105. College Geometry (3) I, II
Prerequisite: Math 51 or 22.
A synthetic treatment of the points and lines associated with triangles and quadrilaterals, similarity, inversion, ruler and compass construction, etc. Highly recommended for all prospective teachers of high school geometry.

106. Projective Geometry (3) II
Prerequisites: Math 51 or 22 and consent of instructor.
Concurrence of lines, collinearity of points and other properties of figures not altered by projections; construction and study of ellipses, hyperbolas, and parabolas by means of projections.

107. Non-Euclidean Geometry (3) I
Prerequisite: Math 51 or 22.
History of attempts to prove the fifth postulate; emphasis on plane synthetic hyperbolic geometry; brief treatment of other types of non-Euclidean geometry.

111. Theory of Algebraic Equations (3) I, II
Prerequisite: Math 51 or 22.
Determinants, complex numbers, and theory of algebraic equations.

112. Analytic Geometry of Space (3) II
Prerequisite: Math 51.
The co-ordinate systems in space; lines, planes, and quadric surfaces; applications.

117. Intermediate Calculus (4) I, II
Prerequisite: Math 51 with grade of C or better.
Essentially the same as Math 52. Advanced students may be assigned special work. Not open for credit to students with credit for Math 52.

118A. Advanced Mathematics for Engineering Students (3) I, II
Prerequisite: Math 52 or equivalent.
Selected topics from ordinary differential equations, with applications; hyperbolic, elliptic, Bessel and gamma functions, Fourier series and integrals, electromechanical analogies, the Laplace transform, and partial differential equations.

118B. Advanced Mathematics for Engineering Students (3) I, II
Prerequisite: Math 118A.
A continuation of Mathematics 118A.

119. Differential Equations (3) I, II
Prerequisite: Math 52 or equivalent.
Ordinary differential equations with applications to geometry, physics, and chemistry.

121A. Advanced Calculus I (3) II
Prerequisite: Math 52 or equivalent.
The real number system, limits and other topics, with emphasis on functions of one variable.

121B. Advanced Calculus II (3) II
Prerequisite: Math 121A.
A continuation of Mathematics 121A with emphasis on functions of two or more variables.

124. Vector Analysis (3) I
Prerequisite: Math 52 or equivalent.
Vector algebra, differentiation of vectors, gradient, divergence, and curl. Applications to geometry and physics.

134. Probability (3) II
Prerequisite: Math 52 or equivalent.
Definitions, computation of probability by enumeration of cases, discrete and continuous chance variables, density functions, moments, limit theorems, selected distributions.

135. Numerical Analysis and Computation I (3) I
Prerequisite: Math 52 or equivalent.
Development of the classical polynomial interpolation formulas by finite differences; application to numerical differentiation and integration; problems will be prepared for and solved by an automatic digital computer.

136. Numerical Analysis and Computation II (3) II
Prerequisites: Math 119 and 135.
Use of classical polynomial interpolation formulas for the solutions of systems of linear equations and differential and difference equations; numerical methods of least squares; problems will be prepared for and solved by an automatic digital computer.

140A. Mathematical Statistics (3) I
Prerequisite: Math 52 or equivalent.
Graphical and arithmetical characterization of observed frequency distributions, moments, use of normal curve, curve fitting, correlation, etc.

140B. Mathematical Statistics (3) II
Prerequisite: Math 140A.
Theoretical discrete and continuous distributions, multiple and partial correlation, large and small sample theory including student's T, Chi-square, and the F distributions with applications.

150. Introduction to Modern Algebra (3) I, II
Prerequisite: Math 50 or consent of instructor.
Selected topics from modern algebra to include an introduction to the theory of groups, Boolean algebra, and finite mathematics.

166. Honors Course (Credit to be arranged) I, II
Refer to the Honors Program.

170. Partial Differential Equations (3) I
Prerequisite: Math 119 or equivalent.
A study of initial and boundary value problems using separation of variables methodology.

177. Quality Control (3) I (Same course as Business Administration 139 and Engineering 177)
Prerequisites: Business Administration 134 and either Economics 140 or Math 12.
Statistical techniques; tolerances and variants; standards; organization for inspection; inspection methods for raw materials, work in process, and finished products; control of inspection devices. Not open to students with credit for Business Administration 139 or Engineering 177.

196. Advanced Topics in Mathematics (2 or 3) I, II
Prerequisite: Consent of instructor.
Selected topics in classical and modern mathematics. May be repeated with the approval of the instructor for a total of six units.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of instructor.

GRADUATE COURSES

200. Seminar (2 or 3) I, II
An intensive study of one phase of mathematics, such as topology, integral equations, calculus of variations, tensor analysis, theory of numbers, ordinary differential equations, differential geometry, theoretical statistics. May be repeated with new subject matter for additional credit.

210A-210B. Mathematics of Physics (3-3) Year Course Beginning Semester I
(Same course as Physics 210A-210B.)
Prerequisite: Admission into a master's degree program.
Selected topics from matrix theory, vector and tensor analysis, orthagonal function, theory, calculus of variations and probability theory with particular emphasis on applications to physical theory.

212. Advanced Ordinary Differential Equations (3) I
Prerequisite: Math. 119 and 121A.
Existence and uniqueness theorems, Wronskians, adjoint systems, Sturm-Liouville boundary value problems, equations of Fuchsian type.

214. Advanced Partial Differential Equations (3) II
Prerequisite: Math. 170.
Theory and application of the solution of boundary value problems in the partial differential equations of engineering and physics by various methods; orthogonal functions, the Laplace transformation, other transformation methods, Green's functions.

224A-224B. Functions of a Complex Variable (3-3) Year Course Beginning Semester I
Prerequisites: Math. 119 and 121B.
Concept of analytic functions, complex integration, residues, power series, conformal mapping. (Mathematics 224 may be taken for a maximum of six units credit.)

224X-Y-Z. Functions of a Complex Variable (2-2-2)
Same course as Mathematics 224A-224B, but offered over a three-semester period.

226A-226B. Functions of a Real Variable (3-3) Year Course Beginning Semester I
Prerequisites: Math. 119 and 121B.
Point sets, functions and limits, continuity, differentiation, Riemann and Lebesgue integration. (Mathematics 226 may be taken for a maximum of six units credit.)

226X-Y-Z. Functions of a Real Variable (2-2-2)
Same course as Mathematics 226A-226B, but offered over a three-semester period.

230A-230B. Abstract Algebra (3) Year Course Beginning Semester I
Prerequisite: Math 121A.
Groups, rings, integral domains, fields, matrices and linear algebras. (Mathematics 230 may be taken for a maximum of six units credit.)

230X-Y-Z. Abstract Algebra (2-2-2)
Same course as Mathematics 230A-230B, but offered over a three-semester period.

290. Bibliography (1) I, II
Exercises in the use of basic reference books, journals, and specialized bibliographies, preparatory to the writing of a master's project or thesis.

296. Directed Field Experience (1-6) I, II
Meets the requirement of directed field experience for candidates for the master of science degree, but is not limited to candidates for the degree. Required in addition to the 30-unit requirement for the degree.

298. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of instructor.

299. Thesis or Project (3) I, II
Prerequisites: An officially appointed thesis committee and advancement to candidacy.
Guidance in the preparation of a project or thesis for the master's degree.

NATIONAL SCIENCE FOUNDATION INSTITUTE FOR MATHEMATICS TEACHERS

During the academic year 1959-60, 50 mathematics teachers selected from high schools and junior high schools throughout the United States will participate in a full time program of studies at San Diego State under the auspices of the National Science Foundation. Twenty-five of these teachers will be selected to continue their studies during the summer of 1960. Each will receive from the National Science Foundation a stipend of $3,000, plus substantial allowance for dependents, travel, books, tuition, and fees. The course work for these teachers will be very largely in mathematics, approximately half of it in regularly offered mathematics courses, and the rest of it in the following courses designed especially to meet the needs of this group.

UPPER DIVISION COURSES

The following courses are open only to participants in the National Science Foundation Institute, except with consent of instructor.

180A. Recent Trends in Teaching and Application of Mathematics (2) I
Open to National Science Foundation students only.
Recent trends in high school mathematics and in application of mathematics. Readings, lectures, field trips. Reading materials to include materials from University of Illinois Committee on High School Mathematics, and current professional magazines.

180B. Recent Trends in Teaching and Application of Mathematics (2) II
Open to National Science Foundation students only.
A continuation of Math. 180A.

181A. Selected Topics of Secondary School Mathematics (2) I
Open to National Science Foundation students only.
A systematic study of the concepts of secondary school mathematics, their applications and their extensions in college mathematics; comparison of traditional vs. recommended modern presentations of these concepts. (Group A participants will take this during the fall semester; Group B participants will take it during both semesters.) Supplementary reading from current professional magazines.

181B. Selected Topics of Secondary School Mathematics (2) II
Open to National Science Foundation students only.
A continuation of Math. 181A.

183. Modern Algebra (3) I
Open to National Science Foundation students only.
Topics of modern algebra with emphasis on their implications for high school mathematics and with attention to aspects of algebra currently becoming more important.

185. Modern Geometry (3) II
Open to National Science Foundation students only.
Topics of modern geometry with emphasis on their implications for high school mathematics. Postulational systems, Euclidean and Non-Euclidean geometries, projective geometry, topology.

187. Statistics for High School Teachers (3) II
Open to National Science Foundation students only.
Statistics topics suitable for high school mathematics teachers; various types of averages, measures of dispersion, graphical methods, index numbers. Statistics for analysis and interpretation of educational research and various types of tests including prognostic tests in mathematics; correlation techniques, T scores, measures of significant difference, regression equations.

GRADUATE COURSES

287. Intermediate Analysis (3) I
Open to National Science Foundation students only.
Axioms of the real number system, mathematical induction, functions and sequences, limit theorems and various limiting processes.

MICROBIOLOGY

IN THE DIVISION OF LIFE SCIENCES

Professor: Myers, M. A. (Chairman)
Assistant Professor: Walch, H. A.
Lecturers: Lloyd; Stanley

A major in microbiology is offered with the A.B. or B.S. degree in *arts and sciences*. Courses in the major are in addition to 45 units in general education courses, unless otherwise specified. A minor is not required of microbiology majors for the bachelor's degree.

A curriculum in medical technology is also available to students majoring in microbiology. This curriculum leads to the fulfillment of academic requirements to qualify for the licensing examinations given by the State of California for Public Health Microbiologist, Clinical Technologist, or Bioanalyst.

A minor in microbiology is offered in *arts and sciences*.

MAJORS

Major With the A.B. Degree

Lower Division. Microbiology 1 or 101; Biology 3 and 4, or Biology 5, or equivalents; Chemistry 1A-1B and 5A; and Biology 15 or equivalent. Recommended: French or German, Mathematics 21 and 22, Physics 2A-2B-3A-3B, and Zoology 8 and 9, or 101. Nine units in the natural sciences may be counted in general education.

Upper Division. 24 upper division units in microbiology and related fields to include Microbiology 102, 103, 104, 107, Chemistry 101A, and 115 or equivalent. Recommended: Zoology 128 and 109.

Major With the B.S. Degree

Lower Division. Microbiology 1 or 101; Biology 3 and 4, or Biology 5, or equivalents; Chemistry 1A-1B and 5A; and Biology 15 or equivalent. Recommended: French or German, Mathematics 21 and 22, Physics 2A-2B-3A-3B, and Zoology 8 and 9. Nine units in the natural sciences may be counted in general education.

Upper Division. 36 upper division units in microbiology and related fields to include Microbiology 102, 103, 104, 105, 107, and 109; Zoology 128; Chemistry 101A, and 115 or equivalent.

MINOR

A minor in microbiology is offered in *arts and sciences*. The minor consists of 15 to 22 units in microbiology to include Microbiology 1 or 101, 102, 103, and the remainder of the units to be chosen from Microbiology 104, 105, 107, and 199. Recommended courses to supplement the minor: Zoology 8 and 9, Chemistry 101A, and 115 or equivalent.

MEDICAL TECHNOLOGY CURRICULUM

A student majoring in microbiology may also satisfy the curriculum in medical technology (formerly known as laboratory technique) by modifications in the arrangements of courses outlined for the strict major. To fulfill the academic requirements to qualify for the licensing examination given by the State of California Public Health Department for Public Health Microbiologist, the student should include Biology 134, Microbiology 189, and Zoology 128, in addition to the major in microbiology described above for the B.S. degree, except that he may choose from the following courses sufficient units to complete his major: Microbiology 105, 107, and Zoology 108, 126.

To fulfill the academic requirements to qualify for the licensing examination given by the State either for Clinical Technologist or Bioanalyst, the student should include Zoology 128, Biology 134, and Microbiology 109 and 189, in addition to the major in microbiology described above for the B.S. degree, except that he should substitute Chemistry 114A-114B for Chemistry 115, and he may choose from the following list, sufficient units to complete the major: Microbiology 105, Zoology 108, 126.

THE MASTER'S DEGREE

The master of arts degree with a major in biology, the master of arts degree for teaching service in life science with a concentration in microbiology, and the master of science degree in applied biology are offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

LOWER DIVISION COURSES

1. General Microbiology (Bacteriology) (4) I

Two lectures and six hours of laboratory.

Prerequisite: Chemistry 1A or 2A (Chemistry 1A-1B for major or minor in microbiology.)

An introduction to microbiology. Effects of physical and chemical agencies upon bacteria; biochemical activities of bacteria; microscopic examination and cultivation of micro-organisms; the bacteria of air, water, soil, milk, and dairy products, other foods; industrial applications. Introduction to disease-producing micro-organisms.

UPPER DIVISION COURSES

101. General Microbiology (Bacteriology) (4) II

Two lectures and six hours of laboratory.

Prerequisite: Chemistry 1A or 2A. (Chemistry 1A-1B for major in microbiology.)

Same general areas covered as in Microbiology 1, but on more intensive upper division level.

102. Advanced Bacteriology (4) I

Two lectures and six hours of laboratory.

Prerequisite: Microbiology 1 or 101. Recommended: Chemistry 101A, biochemistry, and physiology.

Agents of disease and methods of host resistance. Laboratory experience in diagnosis of bacterial pathogens and antibiotic sensitivity. Concepts of virulence and pathogenicity, considering the host-parasite relationship.

103. Fundamentals of Immunology and Serology (4) II

Two lectures and six hours of laboratory.

Prerequisites: Microbiology 1 or 101, and 102. Recommended: biochemistry and physiology.

Antigen-antibody reactions, the immunochemistry of protein and nonprotein cell substances, hemo-serology, and theoretical and pathologic aspects of hypersensitivity. Laboratory diagnosis by use of serological techniques.

104. Medical Mycology (3) I

Two lectures and three hours of laboratory.

Prerequisites: Microbiology 1 or 101, and 102.

A study of the mycotic agents of disease and methods of systematic identification of such agents. Concept of epidemiology, diagnosis, pathology, and host-responses are considered.

105. Bacterial Metabolism (2) II
Two lectures.
Prerequisites: Microbiology 1 or 101, and 102. Recommended: Chemistry 101A and biochemistry.
A course to provide a basic knowledge of the principles by which micro-organisms derive energy to support the life processes.

107. Virology (2) I
Two lectures.
Prerequisites: Microbiology 102 or equivalent, or consent of instructor.
A survey of viruses and Rickettsias as agents of disease. An introduction to virological techniques, and routes of infection with further consideration of concepts of epidemiology, diagnosis, pathology, and host-responses.

109. Hematology (3) I
Two lectures and six hours of laboratory.
Prerequisites: Biology 3 and 4, or Zoology 1.
Microscopic and chemical examination of blood. (Formerly Zoology 109.)

***110. Microbiology and Man (2) I**
Two lectures and demonstrations.
Prerequisite: A college course in biology.
A nontechnical course covering the nature of micro-organisms; their significance in infection, agriculture, sanitation, and industry. A general education course in the life sciences. Not open to students with credit for Microbiology 1 or 101.

166. Honors Course I, II (Credit to be arranged)
Refer to the Honors Program.

189. Clinical Laboratory Procedures (4) II
One lecture and nine hours of laboratory.
Prerequisites: Microbiology 102, 103, 104, 109; and Chemistry 114A and 114B, taken concurrently or previously, or consent of instructor.
Experience in laboratory procedures in the college health services and science laboratories, with instruction in the appropriate fields of the licensing examinations. (Formerly Biology 189.)

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisites: 15 units of work in the life sciences (including courses in microbiology) with grades of A or B; and consent of the instructor.

GRADUATE COURSES

210. Seminar in Medical Bacteriology (2)
Prerequisite: Microbiology 102 or consent of instructor.

220. Seminar in Industrial and Agricultural Microbiology (2)
Prerequisite: Microbiology 101 or consent of instructor.

230. Seminar in Medical Mycology (2)
Prerequisite: Microbiology 104 or consent of instructor.

240. Seminar in General Microbiology (2)
Prerequisites: Microbiology 101 and 105, or consent of instructor.

250. Seminar in Virology (2)
Prerequisite: Microbiology 107 or consent of instructor.

260. Seminar in Immunology and Serology (2)
Prerequisite: Microbiology 103 or consent of instructor.

298. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of staff; to be arranged with department chairman and instructor.

299. Thesis or Project (3) I, II
Prerequisites: An officially appointed thesis committee and advancement to candidacy.
Guidance in the preparation of a project or thesis for the master's degree.

MUSIC

IN THE DIVISION OF FINE ARTS

Professors: Smith, J. D. (Chairman); Springston
Associate Professors: Rost; Smith, D. F.; Snider, M. S.
Assistant Professors: Anderson, P. V.; Biggs; Blyth; Flye; Genzlinger; Hurd; Kemp
Lecturers: Back; Mullenix

A major in music is offered with the A.B. degree in *arts and sciences*. The following majors are offered in *teacher education:* a teaching major with the A.B. degree and special secondary credential and a teaching major leading to the general secondary credential in the postgraduate year. Courses in the music major for the bachelor's degree are in addition to 45 units in general education courses, except that nine units of music courses in the performance groups may be counted in general education.

Students taking a music major are not required to complete a minor for the bachelor's degree. Students who plan to take the general secondary credential with a major in music are advised to include in the undergraduate program a teaching minor for the credential.

Several plans of study are available with varying degrees of emphasis on performance, history and literature, creative activity, and teaching.

The music curricula are designed to fulfill the needs of all students: (1) those who have professional ambitions in music performance, or seek a foundation for graduate study leading to college or university teaching, (2) those who are preparing for one of the several state teaching credentials with music as either a major or minor, (3) those whose major professional interest is in another department, and are seeking musical study as a minor, and (4) those who are interested in music as an elective study area for the enrichment of their cultural background.

A minor in music is offered in *arts and sciences*. A teaching minor in music is offered in *teacher education* for the general secondary credential.

GENERAL BASIC REQUIREMENTS FOR ALL MAJORS

General basic requirements for the A.B. degree with a major in music in arts and sciences or in teacher education are as follows:

1. Upon entering the department, each student is required to take an examination in piano for classification, and to commence on no less than four consecutive semesters of class or private piano study for credit.
2. Upon entering the department, each student is required to declare his major instrument (voice, piano, clarinet, etc.), take an examination thereon for classification, and continue the development of his performance ability through class or individual study for credit after admission to the program.
3. Appearance in at least one student recital during each semester in residence, according to departmental recital requirements.
4. As laboratory experience, participation in two performing groups each semester, beginning with the first semester and continuing for eight semesters for students with the major in arts and sciences, or for seven semesters for students in the special secondary credential program, one of which must be a major group (chorus, choir, glee club, orchestra, or band) in which the major instrument or voice is regularly used.

MAJOR IN ARTS AND SCIENCES

Lower Division. Music 9A-9B, 10ABCD (may be waived in full or part by examination), 52, 59A-59B, eight units selected from courses numbered 70-88, and four units in the major instrument (27-31 units).

Upper Division. 30-32 upper division units to include Music 108, 109A, 146A-146B, 152A-152B; seven units selected from courses numbered 170-188; four units of courses in the major instrument; four units selected from Music 102A-102B, 103A-103B; and the courses in one of the following fields of emphasis: (a) Performance: four units from Music 105, 106, 153, 199; (b) History and Literature: six units from

Music 102A-102B, 103A-103B, 199; (c) Composition: six units from Music 105, 106, 107, 109B, 199. In addition, the student must complete the following requirements in his selected field of emphasis:

Requirements in the Field of Emphasis

Performance. Students emphasizing performance must appear in a joint recital during the junior year and must present a solo recital during the senior year. The student must pass an audition of the compositions to be performed before the music faculty preceding the recitals.

Music History and Literature. During his senior year, the student emphasizing history and literature is required to organize, prepare program notes and present two recitals consisting of recorded or "live" performances. Each will deal with representative works of a certain period or composer or with certain periods, composers, or styles to be compared. Such students must pass a preliminary audition of the material to be presented before the music faculty at least one month in advance of each performance.

Creative Activity and Composition. The student emphasizing creative activity and composition is required to present a concert of his compositions during the senior year and present the scores of works to be performed to the music faculty one month in advance of the performance.

Outline of Specific Requirements

First Year	*Units*
Music 9AB	6
†Music 10AB	0–2
Music organization courses numbered 70-88	4
Major instrument	2
*Health Education 21	2
*Psychology 1	3
*English 1 and Speech Arts 3	5
*Social Science	3
*Physical Education	1
Free electives	4
Total	30

Second Year	*Units*
Music 52	3
†Music 10CD	2
Music 59AB	6
Music organization courses numbered 70-88	4
Major instrument	2
*U. S. History, Constitution, California Government	6
*Literature or philosophy	3
*Physical Education	1
Free electives	3
Total	30

Third Year	*Units*
Music 108	3
Music 146AB	2
Music 152AB	4
Major instrument	2
Music organization courses numbered 170-188	4
*Natural Science	9
‡Electives	8
Total	32

Fourth Year	*Units*
Music 109A	2
Four units selected from Music 102AB, 103AB	4
Major instrument	2
Music organization courses numbered 170-188	3
Units from one of the fields of emphasis listed below	4–6
(a) *Performance:* Four units from Music 105, 106, 153, 199.	
(b) *Music History and Literature:* Six units from Music 102AB, 103AB, 199.	
(c) *Composition:* Six units from Music 105, 106, 107, 109B, 199.	
General education electives	3
‡Electives	12–14
Total	30–32

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* General education courses. Nine units of music organization courses may be counted as general education in the area of literature, philosophy, and the arts.

† May be waived in part or in full by examination.

‡ In addition to the upper division courses in the major, the student must have a sufficient number of upper division units to meet the minimum of 40 required for the A.B. degree.

MAJORS IN TEACHER EDUCATION

Special Secondary Credential in Music

Special Secondary Credential in Music. Students taking this credential must complete the general basic requirements for all music majors, a teaching major in music, and additional requirements in professional education courses.

In addition to the general basic requirements and before recommendation for admission to directed teaching will be granted, credential candidates must have completed all lower division courses in beginning class study of orchestral instruments and voice, Music 146A-146B, and must have passed the Minimum State Credential Requirements in voice and piano, with or without credit, which are as follows:

(a) Piano: Ability (1) to play a Bach two-part invention; (2) to play an artistic accompaniment; (3) to play at sight four-part hymns.

(b) Voice: Ability (1) to sing at least one song representative of each of the following periods of vocal literature: classic, romantic, modern; (2) to sing at sight any part of a four-part hymn.

Students whose background in piano is inadequate for these requirements must register in their first semester for appropriate private or class instruction, with or without credit. Students with insufficient background in voice must register for voice instruction no later than the third semester.

Requirements in the Major. Lower division: Music 9A-9B, 10ABCD (may be waived in full or in part by examination), 15A-15B (or equivalents), 52, 59A-59B; four units selected from Music 20, 25AB, 30, 35; eight units selected from courses numbered 70-88; and four units in the major instrument (31-37 units). Upper division: 27 upper division units to include Music 108, 109A, 146A, 146B, 152A-152B; three units selected from Music 120, 125AB, 130, 135; six units selected from courses numbered 170-188; three units in the major instrument; and four units of upper division music electives.

Professional Courses in Teacher Education. 26 upper division units to include Education 100, 110, 120, 121G, 125, 130D, 180, and Health Education 151.

Outline of Special Secondary Credential Requirements

First year	*Units*	*Second year*	*Units*
Music 9AB	6	Music 59AB	6
†Music 10AB (piano)	0–2	†Music 10CD (piano)	2
†Music 15AB	0–2	Music 52	3
Music organization (courses numbered 70-88)	4	Music organization (courses numbered 70-88)	4
Music courses selected from 20, 25AB, 30, 35	2	Music courses selected from 20, 25AB, 30, 35	2
Major instrument	2	Major instrument	2
*English 1 and Speech Arts 3	5	*U. S. History, Constitution, California Government	6
*Health Education 21	2	*Literature or philosophy	3
*Psychology 1	3	*Natural Science	3
*Social Science	3	*Physical Education	1
*Physical Education	1		
Total	30	Total	32

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* General education courses. Nine units of music organization courses may be counted as general education in the area of literature, philosophy, and the arts.

† May be waived in part or in full by examination.

Third year	*Units*
Music 146AB	2
Music 152AB	4
Music courses selected from 120, 125AB, 130, 135	2
Music organization (courses numbered 170-188)	4
Major instrument	2
*Natural Science	3
Education 100, 110	8
Education 130D	2
Education 121G	2
Education 125	2
Total	31

Fourth year	*Units*
Music 108	3
Upper division music electives	4
Music 109A	2
Music courses selected from 120, 125AB, 130, 135	1
Music organization (courses numbered 170-188)	2
Major instrument	1
*Natural Science	3
General education electives	3
Education 120	4
Health Education 151	2
Education 180	6
Total	31

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* General education courses. Nine units of music organization courses may be counted as general education in the area of literature, philosophy, and the arts.

General Secondary Credential

Major for the General Secondary Credential. A teaching major in music is offered for the general secondary credential. Students may complete requirements for this major and the general secondary credential in one of the following ways:

(1) By taking the special secondary credential in music with the A.B. degree; completing requirements in a teaching minor for the general secondary credential; and completing other credential requirements in a postgraduate year, to include six graduate units to be selected from Music 200, 203, 207, 208, 209, 246 and 252.

(2) By completing the following requirements: (a) a music major in arts and sciences, to include these additional courses: Music 15A-15B (or equivalent); four units selected from Music 20, 25AB, 30, 35; and three units selected from Music 120, 125AB, 130, 135; (b) pass the Minimum State Credential Requirements in voice and piano, with or without credit (see description of these requirements under the special secondary credential above); (c) a teaching minor for the general secondary credential; and (d) the credential requirements in a postgraduate year, to include six graduate units to be selected from Music 200, 203, 207, 208, 209, 246 and 252.

Refer to the section of the catalog on Professional Curricula in Teacher Education for a description of requirements in the postgraduate year.

MINOR IN ARTS AND SCIENCES

A minor in music is offered in arts and sciences. General basic requirements: (1) demonstration of vocal or instrumental performing ability before admission to the minor program may be granted; (2) as laboratory experience, participation in one music performance group each semester for seven semesters (may be waived in special cases by the department chairman). The minor consists of 22 units, including the following requirements: Lower division: Proficiency equivalent to Music 10ABCD; Music 9A; six units selected from 9B, 52, 59A; and four units selected from courses numbered 70-88. Upper division: Music 152A-152B; two units selected from Music 102A-102B, 103A-103B; and three units selected from courses numbered 170-188.

MUSIC MINOR IN TEACHER EDUCATION

General Secondary Credential

Minor for the General Secondary Credential. A teaching minor in music is offered for the general secondary credential. General basic requirements: (1) demonstration of vocal or instrumental performing ability before admission to the minor program may be granted; (2) as laboratory experience, participation in one music performance group each semester for seven semesters (may be waived in special cases by the department chairman). The minor consists of 21 units (exclusive of course equivalents) to include the following courses: Lower division: Music 9A and 52; Music 10A-10B (which may be omitted in part or in full upon demonstration of proficiency); four units of performance group courses selected from courses numbered 70-88; and three to five units selected from Music 15A, 20, 25A,

30. Upper division: Music 146A-146B; three units of performance group courses selected from courses numbered 170-188; and one unit selected from Music 111, 112 116, 117, 121, 122, 126, 127, 131, 132, 150.

A student desiring to use music as a minor for the A.B. degree and at the same time meet the requirements for a teaching minor for the general secondary credential can do this by completing the music minor in arts and sciences, to include Music 52, and the following additional courses: three units from Music 15A, 20, 25A, 30; Music 146A-146B; and one unit from Music 111, 112, 116, 117, 121, 122, 126, 127, 131, 132, 150.

THE MASTER'S DEGREE

The master of arts degree with a major in music and the master of arts degree for teaching service with a concentration in music are offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

ELECTIVES IN MUSIC

The Music Department offers certain courses which fulfill the needs of students who do not have music as a major or minor subject but who are interested in music as an elective study area for the enrichment of their cultural background. Courses particularly suited for these needs are Music 51 and 151 and the music courses numbered 70 to 88 and from 170 to 188; such courses are designated as general education courses and may be taken as partial fulfillment of the literature, philosophy, and the arts requirement in general education.

Some students will be musically prepared to elect courses in music which may or may not be included in the general education group. Enrollment by qualified students who wish to elect these courses is encouraged.

LOWER DIVISION COURSES

***7A. Musicianship—For General Elementary Teachers (3) I, II**
Four hours. No prerequisite.
Elementary music theory and skills including notation, meter, rhythm, scales, intervals, triads, sight singing, ear training, dictation, elementary keyboard facility and other rudiments. State-adopted elementary music texts used. A general elementary credential requirement. Open only to candidates for the general elementary credential. A general education course in literature, philosophy, and the arts.

7B. Music Materials for the Elementary School (3) I, II
Three hours.
Prerequisite: Music 7A or consent of instructor.
Study of all phases of elementary school music: singing, listening, reading, creative music, instruments, repertoire of songs and records, music projects. Required of all general elementary credential candidates.

9A-9B. Elementary Harmony (3-3) I, II
Four hours.
Prerequisite: Music 9A is a prerequisite for 9B.
Sight-singing and ear-training, keyboard harmony, study of traditional distonicism, basic four-voice writing and analysis. (9A was formerly offered as Music X, and 9B was offered as 9A. Not open to students with credit in these courses.)

***10A-10B. Piano—Elementary Class Instruction (1-1) I, II**
Two hours.
Prerequisite: Music 10A as a prerequisite for 10B.
Basic keyboard experience through study of music reading, notation, scales, chords, and sight-reading covering a repertoire of beginning and intermediate songs and piano literature, with emphasis on keyboard harmony. Required for the kindergarten-primary credential and music majors and minors. A general education course in literature, philosophy, and the arts.

10C-10D. Piano—Elementary Class Instruction (1-1) I, II
Two hours.
Prerequisite: Music 10B is a prerequisite for 10C; and 10C for 10D.
Continuation of Music 10A-10B.

11. Piano—Intermediate Class Instruction (1) I, II
Two hours.
Prerequisite: Satisfactory audition before the instructor.
Materials and techniques of intermediate level are studied in detail. May be repeated to a maximum of four units.

15A. Voice—Elementary Class Instruction (1) I, II
Two hours. No prerequisite.
A class for beginners in the vocal field taking up the problems of breath control, tone placement, articulation and enunciation. Frequent classroom performance of simple songs.

15B. Class Voice—Continuation First Semester Voice (1) I, II
Two hours.
Prerequisite: Music 15A or equivalent.
Study of more advanced songs with attention being given to interpretation, as well as continued work on tone, articulation and placement. Frequent performance before class required.

16. Voice—Intermediate Class Instruction (1) I, II
Two hours.
Prerequisite: Satisfactory audition before the instructor.
Materials and techniques of intermediate level are studied in detail. May be repeated to a maximum of four units of credit.

20. Strings—Elementary Class Instruction (1) I, II
Two hours. No prerequisite.
Open to all students but primarily for those whose major instrument is not one of the stringed instruments and who are preparing for a teaching credential in music. May be repeated to a maximum of two units of credit. A maximum of two units toward graduation allowed for Music 20 and/or 120.

21. Strings—Intermediate Class Instruction (1) I, II
Two hours.
Prerequisite: Satisfactory audition before the instructor.
Material and techniques of intermediate level are studied in detail. Sections are offered in violin, viola, cello bass. May be repeated to a maximum of four units of credit.

25A. Clarinet—Elementary Class Instruction (1) I, II
Two hours. No prerequisite.
Open to all students but primarily for those whose major instrument is not clarinet and who are preparing for a teaching credential in music. Not open to students with credit for Music 125A.

25B. Oboe, Flute, and Bassoon—Elementary Class Instruction (1) I, II
Two hours. No prerequisite.
Open to all students but primarily for those whose major instrument is not flute, oboe, or bassoon and who are preparing for a teaching credential in music. Not open to students with credit for Music 125B.

26. Woodwinds—Intermediate Class Instruction (1) I, II
Two hours.
Prerequisite: Satisfactory audition before the instructor.
Materials and techniques of intermediate level are studied in detail. Sections are offered in flute, oboe, clarinet, and bassoon. May be repeated to a maximum of four units of credit.

30. Brass—Elementary Class Instruction (1) I, II
Two hours. No prerequisite.
Open to all students but primarily for those whose major instrument is not one of the brass instruments and who are preparing for a teaching credential in music. May be repeated to a maximum of two units of credit. A maximum of two units toward graduation allowed for Music 30 and/or 130.

31. Brass—Intermediate Class Instruction (1) I, II
Two hours.
Prerequisite: Satisfactory audition before the instructor.
Materials and techniques of intermediate level are studied in detail. Sections are offered in horn, trumpet, trombone, tuba, and baritone. May be repeated to a maximum of four units of credit.

35. Percussion—Elementary Class Instruction (1) I, II
Two hours. No prerequisite.
Open to all students but primarily for those who are preparing for a teaching credential in music. Not open to students with credit for Music 135.

50. Applied Music—Individual Study (1) I, II
Ten one-hour lessons or 15 40-minute lessons.
For the teaching credential performance requirement or for the requirements of the major emphasis curricula leading to the A.B. degree with a major in music. See explanation below for conditions under which credit may be given for music study under private instructors. May be repeated for a total of four units.

Piano
Organ
Voice
Flute
Oboe
Clarinet
Saxophone
Bassoon
French Horn
Trumpet
Trombone
Baritone Horn
Tuba
Percussion
Violin
Viola
Cello
Contrabass

***51. Introduction to Music (3) I**
Three lectures. No prerequisite.
Practical approach to hearing music with understanding and pleasure, through study of representative compositions of various styles and performance media, great musicians and their art. Music correlated with other arts through lectures, recordings, concerts. Closed to music majors and minors. A general education course in literature, philosophy, and the arts. (Formerly offered as Aesthetics 2. Not open to students with credit in this course.)

52. Orientation in Music Literature (3) I, II
Three lectures. No prerequisite.
An introductory course in the elements of musical style, structure, and media of expression as found in representative musical literature. Lectures, text, and assigned study of phonograph recordings and musical scores.

53. Opera Technique (2) I, II
Three hours per week. No prerequisite.
Training in the interpretation and characterization of light and grand opera. Specific work in co-ordination of operatic ensemble.

59A. Intermediate Harmony and Two-part Counterpoint (3) I, II
Three lectures.
Prerequisite: Music 9B.
Continuation of Music 9B. Harmonic alteration, two-voice counterpoint based on baroque polyphonic technique, simple chorale figuration and the invention. (Music 59A was formerly offered under the number 9B and is not open to students with credit in this course.)

59B. Advanced Harmony and Three-part Counterpoint (3) I, II
Three lectures.
Prerequisite: Music 59A.
Harmonic alteration, analysis and writing of the smaller homophonic forms. Baroque polyphony in three-voice technique, chorale figuration, the suite, the fughetta. (Music 59B was formerly offered under the number 59A and is not open to students with credit in this course.)

PERFORMANCE ORGANIZATION COURSES

The performance organization courses are devoted to the study in detail and the public performance of a wide range of representative literature for each type of ensemble and designed to provide students with practical experience in rehearsal techniques. Courses preceded by an asterisk (*) are general education courses in literature, philosophy, and the arts, unless used in the major (see the music major for specific information).

***70. Chamber Music (1) I, II**
Three hours.
Prerequisite: Consent of instructor.
Sections for string, woodwind, brass, piano, vocal, and mixed ensemble groups. May be repeated to a maximum of four units.

72A. Beginning Instrumental Ensemble (½) I, II
Two hours.
Prerequisite: Music 20 or 25A or 30, or equivalent.
Open to all instrumental students. Group performance of simple orchestral and band scores.

72B. Intermediate Instrumental Ensemble (½) I, II
Two hours.
Prerequisite: Music 72A or equivalent.
Group performance of orchestral and band scores of more advanced grade. Materials covered will prepare the student for minor parts in either the symphony orchestra or the symphony band.

***75. Marching Band (1) I**
Concurrent registration in Music 75 and 76 required. Combined activity, six hours.
Prerequisite: Consent of instructor.
May be repeated to a maximum of two units.

***76. Symphonic Band (1) I, II**
Semester I: Concurrent registration in Music 75 and 76 required. Combined activity, six hours.
Semester II: Activity, five hours.
Prerequisite: Consent of instructor.
May be repeated to a maximum of four units.

***80. Symphony Orchestra (1) I, II**
Five hours.
Prerequisite: Consent of instructor.
May be repeated to a maximum of four units.

***85. Concert Choir (1) I, II**
Five hours.
Prerequisite: Consent of instructor.
May be repeated to a maximum of four units.

***86. Treble Clef (1) I, II**
Three hours.
Prerequisite: Consent of instructor.
May be repeated to a maximum of four units.

***87. Men's Glee Club (1) I, II**
Three hours.
Prerequisite: Consent of instructor.
May be repeated to a maximum of four units.

***88. College Chorus (1) I, II**
Three hours. No prerequisite.
Open to all persons interested in performing oratorio, cantata, opera, and the extended choral works. No entrance auditions are required. May be repeated to a maximum of four units of credit.

UPPER DIVISION COURSES

102A. Chamber Music Literature (2) I
Two lectures.
Prerequisites: Music 152A-152B.
Instrumental ensemble repertoire, including all ensemble combinations from sixteenth to twentieth centuries. Analysis by use of scores and recordings.

102B. Keyboard Literature (2) II
Two lectures.
Prerequisites: Music 152A-152B.
Piano, organ, and other clavier literature from the sixteenth to twentieth centuries. Recordings, scores, and guest performers.

103A. Symphonic Literature (2) I
Two lectures.
Prerequisites: Music 152A-152B.
A study of the symphony and symphonic poem; the evolution of their growth; an analysis with scores of the structure, harmonic content, and instrumentation of representative works of each period; an examination of their meaning and place in the history of music.

103B. Song Literature (2) II
Two lectures.
Prerequisites: Music 152A-152B.
Historical and musical development of the art song and of the folk song. Works of representative European and American composers in these media. Recordings and scores.

105. Modern Harmonic Practice and Four-part Counterpoint (3) I, II
Three lectures.
Prerequisite: Music 59B.
Analysis and composition in modern idioms. Continuation of baroque polyphony into four-voice technique, writing of canon and fugue. (Music 105 was formerly offered in the lower division under the number 59B and with the same title. Not open to students with credit in this lower division course.)

106. Sixteenth Century Counterpoint (3) I, II
Three lectures.
Prerequisite: Music 59B.
Study of the contrapuntal techniques of the sixteenth century, as revealed in the works of Palestrina, Lassus, and Ingegneri. Compositional exercise in setting parts of the Mass. Not open to students with credit in Music 106A-106B.

107. Composition (3) I, II
Three lectures.
Prerequisite: Music 59B.
Original writing in the larger homophonic and polyphonic forms, for various media. Opportunity for recital performance of original works.

108. Form and Analysis (3) I, II
Three lectures.
Prerequisite: Music 59B.
A study of structure and design as found in the traditional musical forms.

109A-109B. Instrumentation and Arranging (2-2) Year Course
Beginning Semester I
Two lectures.
Prerequisites: Music 59B. Music 109A is a prerequisite for 109B.
Arranging of music for full orchestra. Selected works of students to be performed by standard orchestras.

111. Piano—Intermediate Class Instruction (1) I, II
Two hours.
Prerequisite: Satisfactory audition before the instructor.
Materials and techniques of intermediate level are studies in detail. May be repeated to a maximum of four units of credit.

112. Piano—Advanced Class Instruction (1) I, II
Two hours.
Prerequisite: Satisfactory audition before the instructor.
Materials and techniques of the advanced level are studied in detail. May be repeated to a maximum of four units of credit.

116. Voice—Intermediate Class Instruction (1) I, II
Two hours.
Prerequisite: Satisfactory audition before the instructor.
Materials and techniques of the intermediate level are studied in detail. May be repeated to a maximum of four units of credit.

117. Voice—Advanced Voice Instruction (1) I, II
Two hours.
Prerequisite: Satisfactory audition before the instructor.
Materials and techniques of the advanced level are studied in detail. May be repeated to a maximum of four units of credit.

118-S. Workshop in Choral Art (6) Summer
Prerequisite: Consent of the instructor.
An integrated course in choral and chamber music to be performed by workshop participants with the College Chorus and the San Diego Symphony Orchestra and in chamber music concerts. Development of analytical technique; study of vocal technique, of the larger forms, and of styles, including performing practices of the baroque and later periods. May be taken twice for credit.

120. Strings—Elementary Class Instruction (1) I, II
Two hours.
Prerequisite: Junior standing
Open to all students but primarily for those whose major instrument is not one of the stringed instruments and who are preparing for a teaching credential in music. May be repeated to a maximum of two units of credit. A maximum of two units toward graduation allowed for Music 120 and/or 20.

121. Strings—Intermediate Class Instruction (1) I, II
Two hours.
Prerequisite: Satisfactory audition before the instructor.
Materials and techniques of intermediate level are studied in detail. Sections are offered in violin, viola, cello, and bass. May be repeated to a maximum of four units of credit.

122. Strings—Advanced Class Instruction (1) I, II
Two hours.
Prerequisite: Satisfactory audition before the instructor.
Repertoire includes study of standard orchestral parts, solos, sonatas, suites and concerti. Sections are offered in violin, viola, cello, and bass. May be repeated to a maximum of four units of credit.

123-S. Workshop in Instrumental Techniques and Chamber Music for String, Woodwind, and Brass Instruments (2) Summer
Prerequisite: Consent of the instructor.
The analysis and interpretation of the literature for each instrument, with performance in various ensemble units; both group and individual instruction in class, under performing professional musicians.

125A. Clarinet—Elementary Class Instruction (1) I, II
Two hours.
Prerequisite: Junior standing.
Open to all students but primarily for those whose major instrument is not clarinet and who are preparing for a teaching credential in music. Not open to students with credit for Music 25A.

125B. Oboe, Flute, and Bassoon—Elementary Class Instruction (1) I, II
Two hours.
Prerequisite: Junior standing.
Open to all students but primarily for those whose major instrument is not flute, oboe, or bassoon and who are preparing for a teaching credential in music. Not open to students with credit for Music 25B.

126. Woodwinds—Intermediate Class Instruction (1) I, II
Two hours.
Prerequisite: Satisfactory audition before the instructor.
Materials and techniques of intermediate level are studied in detail. Sections are offered in flute, oboe, clarinet, and bassoon. May be repeated to a maximum of four units of credit.

127. Woodwinds—Advanced Class Instruction (1) I, II
Two hours.
Prerequisite: Satisfactory audition before the instructor.
Repertoire includes study of standard orchestral parts, solos, sonatas, suites and concerti. Sections are offered in flute, oboe, clarinet, and bassoon. May be repeated to a maximum of four units of credit.

130. Brass—Elementary Class Instruction (1) I, II
Two hours.
Prerequisite: Junior standing.
Open to all students but primarily for those whose major instrument is not one of the brass instruments and who are preparing for a teaching credential in music. May be repeated to a maximum of two units of credit. A maximum of two units toward graduation allowed for Music 130 and/or 30.

131. Brass—Intermediate Class Instruction (1) I, II
Two hours.
Prerequisite: Satisfactory audition before the instructor.
Materials and techniques of intermediate level are studied in detail. Sections are offered in horn, trumpet, trombone, tuba, and baritone. May be repeated to a maximum of four units of credit.

132. Brass—Advanced Class Instruction (1) I, II
Two hours.
Prerequisite: Junior Standing.
Repetoire includes study of standard orchestral parts, solos, sonatas, suites and concerti. Sections are offered in horn, trumpet, trombone, tuba, and baritone. May be repeated to a maximum of four units of credit.

135. Percussion—Elementary Class Instruction (1) I, II
Two hours.
Prerequisite: Junior standing.
Open to all students but primarily for those who are preparing for a teaching credential in music. Not open to students with credit for Music 35.

141. Methods in Teaching Piano (3) I, II
Three hours.
Prerequisite: Junior standing.
Teaching of beginning and intermediate piano. Survey of materials available for child and adult classes. Special consideration of the problems of the adult beginner. Supervised teaching of beginning students in individual lessons and class groups.

142. Survey of Harmony and Musical Form (2) (Irregular)
Two lectures.
Prerequisite: A minimum of four semesters of basic music theory.
A review of diatonic and chromatic harmony, modulation and musical form. The material covered will serve as refresher study for the Colleague Examination under the California Plan of the Music Teachers Association of California. Not open to music majors or minors.

146A. Choral Conducting (1) I, II
Three hours.
Prerequisite: Junior standing.
Elements of baton technique and development of basic skills common to choral conducting. Representative literature and techniques for choral organizations will be studied and performed. Practical experience in typical conducting situations will be emphasized in various grade levels. Not open to students with credit in Music 146C, currently discontinued.

146B. Instrumental Conducting (1) II
Three hours.
Prerequisite: Music 146A.
Study of orchestra and band scores of graduated levels of advancement. The class will prepare and conduct instrumental works in public performances.

150. Applied Music—Individual Study (1) I, II
For the teaching credential performance requirement or for the requirements of the major emphasis curricula leading to the A.B. degree with a major in music. See explanation below for conditions under which credit may be given for music study under private instructors. May be repeated for a total of four units.

Piano
Organ
Voice
Flute
Oboe
Clarinet
Saxophone
Bassoon
French horn
Trumpet
Trombone
Baritone horn
Tuba
Percussion
Violin
Viola
Cello
Contrabass

***151. Great Music (3) II**
Three lectures. No prerequisite.
Instrumental and vocal music in the larger forms studied through directed listening. Artistic trends and their effect upon music composition and performance. Completion of Music 51 is recommended, but not required as a prerequisite. A general education course in literature, philosophy, and the arts. (Formerly offered as Aesthetics 102 and is not open to students with credit in this course.)

152A-152B. History of Music (2-2) Year Course Beginning Semester I
Two lectures.
Prerequisites: Music 52 and 59B; Music 152A is a prerequisite for 152B.
Detailed study of the chronological development of musical art and forms from the Middle Ages to the present. Analytical score study and assigned recordings. Familiarity with musicological resources through individual assignments. (Formerly offered as Music 52A-52B. Not open to students with credit in these courses.)

153. Opera Technique (2) I, II
Three hours. No prerequisite.
Training in interpretation and characterization of light and grand opera. Specific work in co-ordination of opera ensemble.

166. Honors Course I, II (Credit to be arranged)
To be arranged after consultation with the chairman of the department. Refer to the Honors Program.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of the department chairman.

PERFORMANCE ORGANIZATION COURSES

The performance group courses are devoted to the study in detail and the public performance of a wide range of representative literature for each type of ensemble and designed to provide students with practical experience in rehearsal techniques. Courses preceded by an asterisk (*) are general education courses in literature, philosophy, and the arts, unless used in the major (see the music major for specific information).

***170. Chamber Music (1) I, II**
Three hours.
Prerequisite: Consent of instructor.
Sections for string, woodwind, brass, piano, vocal, and mixed ensemble groups. May be repeated to a maximum of four units.

172A. Beginning Instrumental Ensemble (½) I, II
Two hours.
Prerequisite: Music 20 or 25A or 30, or equivalent.
Open to all instrumental students. Group performance of simple orchestral parts and band scores.

172B. Intermediate Instrumental Ensemble (½) I, II
Two hours.
Prerequisite: Music 72A or equivalent.
Group performance of orchestral and band scores of more advanced grade. Materials covered will prepare the student for minor parts in either the symphony orchestra or the symphony band.

***175. Marching Band (1) I**
Concurrent registration in Music 175 and 176 required. Combined activity, six hours.
Prerequisite: Consent of instructor.

***176. Symphonic Band (1) I, II**
Semester I: Concurrent registration in 175 and 176 required. Combined activity, six hours.
Semester II: Five hours per week.
Prerequisite: Consent of instructor.
May be repeated to a maximum of four units.

***180. Symphony Orchestra (1) I, II**
Five hours.
Prerequisite: Consent of instructor.
May be repeated to a maximum of four units.

***185. Concert Choir (1) I, II**
Five hours.
Prerequisite: Consent of instructor.
May be repeated to a maximum of four units.

***186. Treble Clef (1) I, II**
Three hours.
Prerequisite: Consent of instructor.
May be repeated to a maximum of four units.

***187. Men's Glee Club (1) I, II**
Three hours.
Prerequisite: Consent of instructor.
May be repeated to a maximum of four units.

***188. College Chorus (1) I, II**
Three hours. No prerequisite.
Open to all persons interested in performing oratorio, cantata, opera, and the extended choral works. No entrance auditions are required. May be repeated to a maximum of four units of credit.

GRADUATE COURSES

200. Seminar in Music Education (3) I, II
Prerequisite: Consent of instructor.
Seminars in music education are offered to provide an opportunity for concentrated study in the several areas listed.
A. Supervision of music education
B. Junior high school music
C. Marching band technic
D. Instrumental methods
E. Choral methods

203. Musicology (3) I, II
Prerequisites: Music 152A and 152B.
Problems and methods of research in aesthetics, acoustics, music history and related fields. Source materials, bibliography. Completion of written project.

207. Composition (2 to 3) I, II
Prerequisite: Music 107.
Advanced composition for various media, development of original idiom, intensive study of modern music. Public performance of an extended original work as a project.

208. Seminar: Music Theory (3) I, II
Prerequisite: Music 108.
Seminar in the history of theoretical materials and procedures from the twelfth century to the present with detailed analysis of selected major works.

209. Advanced Orchestration (2) I, II
Prerequisites: Music 102A, 103A, 109B.
Intensive work in the practical scoring for ensembles, full orchestra, and symphonic band. Score analysis. Selected works of the class members will be performed.

218. Seminar in Choral Art (6) Summer
Prerequisite: Consent of instructor.
A study of choral and chamber music performed by seminar participants in the College Chorus, the San Diego Symphony Orchestra, and Chamber Music Concerts. Development of analytical technique; study of vocal techniques, of the larger forms, and of styles, including performing practices of the baroque and later periods. Total credit for Music 118-S and Music 218 limited to 18 units, with a limit of six units which may be applied to the master's degree. (Formerly Music 207.)

246A. Advanced Choral Conducting (2) I, II
Prerequisite: Music 146B.
Course designed to develop skills at professional level; study of different styles of choral literature and their relationship to conductor's art; score analysis and experience in conducting.

246B. Advanced Instrumental Conducting (2) I, II
Prerequisite: Music 146B.
Course designed to develop skills at professional level; study of conducting style as related to band and orchestra literature, score analysis and experience in conducting.

250. Applied Music—Advanced Individual Study (1) I, II
For the graduate student who qualifies for advanced study through an audition before the Music Department faculty. See explanation below for conditions under which credit may be given for music study under private instructors. May be repeated to a maximum of two units.

Piano
Organ
Voice
Flute
Oboe
Clarinet
Saxophone
Bassoon
French Horn
Trumpet
Trombone
Baritone Horn
Tuba
Percussion
Violin
Viola
Cello
Contrabass

252. Seminar: Music History (3) I, II
Prerequisites: Music 152B and consent of instructor.
Seminars in music history are offered for intensive study in each of the historical eras listed below.

A. Music of the Baroque Era
B. Music of the eighteenth and nineteenth centuries
C. Twentieth century music

290. Bibliography (1) I, II
Exercises in the use of basic reference books, journals, and specialized bibliographies, preparatory to the writing of a master's project or thesis.

298. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of staff; to be arranged with department chairman and instructor.

299. Thesis or Project (3) I, II
Prerequisites: An officially appointed thesis committee and advancement to candidacy.
Guidance in the preparation of a project or thesis for the master's degree.

CONDITIONS UNDER WHICH CREDIT MAY BE GIVEN FOR MUSIC STUDY UNDER PRIVATE INSTRUCTORS

Credit may be allowed for private instruction in music under the following conditions:

1. The applicant for such credit must be either a regularly enrolled student in the Music Department of the college (that is, a music major or minor), or he must have as a prerequisite or be taking concurrently with his private study, three units chosen from these specific courses: Music 7A, 9A, 51, or 151.
2. The instructor giving such private work must be approved by the Music Department. All private work and names of all such teachers must be registered in the office of the Music Department chairman at the beginning of the semester.
3. Under no circumstances may a student change teachers in the middle of a semester without first notifying the chairman of the Music Department and securing his permission for this change.
4. In case of first semester of private study in San Diego State College, the student is required to take a placement examination conducted by the Music Department faculty at the beginning of the semester, which will show the status of the student at the beginning of his work.
5. Students who have dropped out of school, or have stopped taking Applied Music for credit for one semester or more, upon the resumption of that instruction for credit are required to take the placement examination.
6. Evidence that the standards of the Music Department have been met will be shown by an examination conducted by the Music Department faculty at the end of the semester.
7. Ten clock hours of lessons and adequate preparation to pass the Applied Music examinations and the curriculum requirements of the department are required for one unit of credit.

NURSING

IN THE DIVISION OF LIFE SCIENCES

Associate Professor: Nye (Chairman)
Assistant Professors: Atkinson; Coveny; Ganong; Geitgey; Moses

The nursing program consists of a four-year course of study leading to a B.S. degree in nursing. Graduates of the program are eligible to write the examination for licensure as a registered nurse. The Department of Nursing is accredited by the California Board of Nurse Examiners.

The curriculum in nursing requires completion of a minimum of 128 semester units of work as prescribed. Opportunity for clinical laboratory practice is offered in hospitals and health agencies. During the first semester only, all courses are held on the San Diego State campus.

Any student who is regularly admitted to the college may enter the nursing program. Students will normally enter the program in the freshman year, beginning with the fall semester. Students who enter with advanced standing credit from other colleges will be required to complete the remaining requirements in the nursing program for the degree. Graduate nurses from accredited hospital schools of nursing who hold the R.N. license may normally be expected to complete requirements for the degree within three years, subject to satisfactory completion of placement examinations in the professional nursing courses.

NURSING MAJOR

A major in nursing is offered with the B.S. degree in arts and sciences. Courses in the major are in addition to general education courses, unless otherwise specified. A minor is not required for the B.S. degree.

Requirements

Lower Division. Nursing 1, 20A-20B, 33A-33B, 34, 36 (24 units); Microbiology 1; Chemistry 2A-2B; Home Economics 4A-4B; Physics 5; Sociology 1; Zoology 8 and 9 (28 units).

Upper Division. Nursing 112, 114, 115, 118, 124, 125, 126, and 130 (32 units); Sociology 121, 135, 140; Psychology 106 and 131 (15 units).

General Education

General Education. The following courses may be counted in general education: 12 units in the natural sciences for chemistry and zoology; six units in the social sciences for Sociology 1 and 140 or 135; three units in family life education for Home Economics 4A-4B; and two units of pattern credit in Health Education 21 for completion of the total nursing program. An additional 22 units to complete the 45 units required in general education will be selected from the regularly listed courses in general education.

OUTLINE OF COURSES

The following outline of courses, subject to individual adjustments to a small degree, is included as a guide to students in the nursing curriculum:

First Year

First Semester	*Units*	*Second Semester*	*Units*
Nursing 1	1	Nursing 20A	3
English 1	3	English 2 or 3	3
Chemistry 2A	3	Chemistry 2B	3
Zoology 8	4	Zoology 9	4
Psychology 1	3	Home Economics 4A-4B	3
Speech Arts 3	2	Physical Education	½
Physical Education	½		
	16½		16½

Second Year

First Semester	*Units*	*Second Semester*	*Units*
Nursing 20B	5	Nursing 33B	3
Microbiology 1	4	Nursing 34	5
Nursing 36	2	Physics 5	4
Nursing 33A	5	Sociology 51	3
Physical Education	½	Physical Education	½
	16½		15½

Third Year

First Semester	*Units*	*Second Semester*	*Units*
Nursing 112	5	Nursing 114	5
Nursing 130	2	Sociology 140	3
Nursing 115	3	Psychology 131	3
Sociology 135	3	Electives	5
Psychology 106	3		
	16		16

Fourth Year

First Semester	*Units*	*Second Semester*	*Units*
Nursing 118	5	U. S. History, Constitution, California Government	3
U. S. History, Constitution, California Government	3	Nursing 124	3
Sociology 121	3	Nursing 125	4
Electives	5	Nursing 126	5
	16		15

LOWER DIVISION COURSES

1. Orientation to Nursing (1) I
One lecture. No prerequisite.

An introduction and orientation to the profession of nursing. Considers ethical principles, the nurses' code, and professional problems which will face the student nurse.

20A. Nursing Arts (3) II
One lecture and six hours of laboratory.
Prerequisites: Zoology 8, Psychology 1, Nursing 1.
Individual hygiene and family health; orientation to the hospital as a community health agency and to the responsibilities of a nurse in providing good patient care.

20B. Nursing Arts (5) I
Two lectures and nine hours of laboratory.
Prerequisites: Nursing 20A; credit or registration in Zoology 9 and Microbiology 1.
Introduction to the elements of observation and the records involved in patient care, and to the application of bacteriologic principles of asepsis and disinfection.

33A. Medical Nursing (5) I
Three lectures and six hours of laboratory.
Prerequisite: Nursing 20B.
Theory and practice of nursing care for the individual patient, and of medical therapy. Problems in total patient care.

33B. Medical Nursing (3) II
One lecture and six hours of laboratory.
Prerequisite: Nursing 33A.
Continuation of Nursing 33A.

34. Surgical Nursing (5) II
Two lectures and nine hours of laboratory.
Prerequisite: Nursing 20B.
Theory and practice of nursing care for the individual patient, and of surgical therapy. Problems in total patient care.

36. Community Nursing (2) I
Two lectures.
Prerequisite: Nursing 20A.
A study of social and health agencies and how they influence the nursing needs of individuals and families in the hospital, home, and community.

UPPER DIVISION COURSES

Courses numbered 150 to 160 are open only to graduate nurses.

112. Obstetric Nursing (5) I
Two lectures and nine hours of laboratory.
Prerequisite: Nursing 20B.
Study of care and treatment of the obstetric patient and newborn infant.

114. Pediatric Nursing (5) II
Two lectures and nine hours of laboratory.
Prerequisite: Nursing 20B.
Nursing care of infants and children; prevention and control of disease; and instruction of parents.

115. Advanced Surgical Nursing (3) I
One lecture and six hours of laboratory.
Prerequisite: Nursing 34.
Methods and principles of surgical nursing in selected clinical areas. Emphasis on specialized therapeutic techniques.

118. Psychiatric Nursing (5) I
Two lectures and nine hours of laboratory.
Prerequisite: Nursing 20B.
Major concepts of psychiatric nursing and mental health that are involved in care of the mentally ill; therapies and rehabilitation measures.

124. Leadership Roles in Nursing (3) I, II
Two lectures and three hours of laboratory.
Prerequisite: Nursing 130.
Professional and legal responsibilities of the nurse: selected practice activities in the role of team leader.

125. Public Health Nursing (4) I, II
Four lectures.
Prerequisite: Nursing 36.
Principles of Public Health Nursing and organization and administration of health services.

126. Public Health Nursing Practice (5) I, II
Fifteen hours of laboratory.
Prerequisites: Nursing 36 and credit or concurrent registration in Nursing 125.
Guided public health nursing practice in community health agencies, out-patient clinics, schools and homes.

130. History of Nursing (2) II
Two lectures.
Prerequisite: Nursing 1.
Nursing from earliest times; emphasis on the place of nursing in world history and the present social order.

Courses for Graduate Nurses

150. Trends in Nursing (2) II
Two lectures.
Prerequisite: R.N. certificate.
A survey of recent developments and current problems in nursing service and education.

151. Ward Management (3) I
Two lectures and three hours of laboratory.
Prerequisite: R.N. certificate.
Problems of organization, personnel, and operation of a hospital unit, ward or clinic.

152. In-service Instruction (2) II
Two lectures.
Prerequisite: R.N. certificate.
Application of the principles and methods of teaching in the various clinical services.

154. Legal Aspects of Nursing (2) I
Two lectures.
Prerequisite: R.N. certificate.
Legal responsibilities of graduate nurses. Discussion and review of legal interpretations in selected cases.

160. Nursing in School Health Services (3) II
Three lectures.
Prerequisite: Nursing 125, or equivalent to be determined by examination.
The application of health principles and current best practices in schools with emphasis on the functions of the school nurse related to the school, home, and community.

Individual Study

166. Honors Course (Credit to be arranged) I, II
Refer to the Honors Program.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of the instructor.

OCEANOGRAPHY

IN THE DIVISION OF LIFE SCIENCES

Assistant Professor: McBlair

UPPER DIVISION COURSES

***100. The Oceans (2) I**
Biological and physical aspects of the oceans and their significance to man; problems of modern oceanography. One unit to apply as life science and one unit as physical science for general education in the area of natural sciences. Prerequisites: Introductory courses in life and physical sciences.

PERSONNEL MANAGEMENT CURRICULA

IN THE DIVISIONS OF BUSINESS ADMINISTRATION, LIFE SCIENCES, SOCIAL SCIENCES

Personnel management curricula are offered by several departments under different academic majors. Descriptions of these majors may be found in this section of the catalog under the heading of the department offering the major.

Major in Personnel Management. This curriculum is offered by the Department of Management as a major with the B.S. degree. Refer to Business Administration, Department of Management for a description.

Major in Public Personnel Management. This curriculum is offered by the Department of Political Science as a major with the A.B. degree. Refer to Political Science for a description.

Major in Preindustrial and Personnel Psychology. This major is offered by the Department of Psychology as an area of emphasis in the psychology major with the A.B. degree. Refer to Psychology for a description.

M.A. Degree in Personnel Supervision and Training. The master of arts degree is offered in Personnel Supervision and Training. Refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division for further information.

PHILOSOPHY

IN THE DIVISION OF HUMANITIES

Professors: Mendenhall; Ruja (Chairman); Searles; Shields; Turner
Assistant Professors: Nelson, S. M.; Widmer

A major in philosophy is offered with the A.B. degree in *arts and sciences*. Courses in the major are in addition to 45 units in general education courses. A minor is not required of philosophy majors for the bachelor's degree. A reading knowledge of one foreign language, preferably French or German, is required.

MAJOR

Lower Division. Nine units in philosophy.

Upper Division. 24 upper division units in philosophy, or 18 units in philosophy and six units selected from related fields with the approval of the departmental adviser.

Foreign Language. 12 units of a foreign language or equivalent knowledge demonstrated by a test of reading knowledge (administered by the Department of Foreign Languages, in consultation with the Philosophy Department) is required. Selection of French or German is strongly recommended.

MINOR

A minor in philosophy is offered in arts and sciences. The minor consists of 15 to 22 units in philosophy, nine units of which must be in courses carrying upper division credit.

LOWER DIVISION COURSES

***1A. Introduction to Philosophy (3) I, II**
The place of philosophy in intelligent living. The methods, values, and areas of philosophical inquiry. Through discussion procedures, each student is encouraged to think independently on issues in ethics and religion. A general education course in literature, philosophy, and the arts.

***1B. Introduction to Philosophy (3) I, II**
Prerequisite: Philosophy 1A.
The nature of philosophical inquiry as applied to problems of knowledge and reality. Through discussion procedures, the student has opportunity and is encouraged to formulate his own tentative conclusions. A general education course in literature, philosophy, and the arts.

***20. Logic (3) I**
Introduction to deductive and inductive logic. Logic and language. Analysis of fallacies. Uses of logic in science and in daily life. A general education course in literature, philosophy and the arts.

UPPER DIVISION COURSES

Philosophy 1A is a prerequisite for all upper division courses except Philosophy 111A-111B and 130.

***100A. Ancient and Medieval Philosophy (3) I**
Prerequisite: Philosophy 1A.
Roots of Western science and philosophy, with special emphasis on Socrates, Plato, and Aristotle; philosophy in the Christian era. A general education course in literature, philosophy, and the arts.

***100B. Modern Philosophy (3) II**
Prerequisite: Philosophy 1A.
Renaissance thought and the rise of modern empirical science; including the systematic thought of Descartes, Leibniz, Spinoza, Locke, Berkeley, Hume, and Kant. A general education course in literature, philosophy, and the arts.

***101. Contemporary Philosophy (3) II**
(Offered in 1960-61 and alternate years)
Prerequisite: Philosophy 1A.
The major philosophical issues, movements, and figures in American and European philosophy of the twentieth century. A general education course in literature, philosophy, and the arts.

***111A-111B. Theory of the State (3-3) Year Course Beginning Semester I**
(Same course as Political Science 111A-111B)
The nature of the state, its organization and activities, and its relation to the individual and to other states. A general education course in literature, philosophy, and the arts. Not open to students with credit for Political Science 111A-111B.

121. Deductive Logic (3) I
(Offered in 1960-61 and alternate years)
Prerequisite: Philosophy 1A.
Analysis of propositions. Immediate and mediate inference. The syllogism. Dilemmas. Modern symbolic logic.

122. Inductive Logic (3) II
(Offered in 1959-60 and alternate years)
Prerequisite: Philosophy 1A.
Definition, classification, and division. The logic of experimentation and statistics. Formation and validation of hypotheses. Probability theories.

128. Theory of Ethics (3) I
Prerequisite: Philosophy 1A.
A study of significant and typical value theories and systems and of the concrete problems such theories seek to explain. The emphasis will be placed on moral values. The student will be encouraged to examine critically his own system of values.

***129. Social Ethics (3) II**
Prerequisite: Philosophy 1A.
Ethical issues of contemporary life. Individualism vs. collectivism; democracy vs. dictatorship; ethical problems arising in law, medicine, business, government, and interpersonal relationships. A general education course in literature, philosophy, and the arts.

130. Semantics (3) II (Same course as Speech Arts 130)
Recognition of various types of linguistic meaning; logical distinctions in discourse; distinction between real and verbal disagreement; recognition and correction of semantic fallacies. Not open to students with credit for Speech Arts 130.

134. Philosophy of Literature (3) I
Prerequisite: Philosophy 1A.
Study of literature of philosophical significance, and of philosophical problems of literature. Representative works of rationalism, realism, romanticism, existentialism and other modern directions of thought are considered with regard to both their intellectual and literary principles.

***135. Philosophy of Religion (3) II**
Prerequisite: Philosophy 1A.
An impartial survey of religious thought and practice in the major world religions; exploration of issues raised by the history, psychology, and sociology of religion. A general education course in literature, philosophy, and the arts.

***136. Philosophy of Art (3) II**
Prerequisite: Philosophy 1A.
The nature of esthetic experience. The principal theories of art, both traditional and contemporary, are studied at length, both in relation to actual artistic production and to the role of art in society. A general education course in literature, philosophy, and the arts.

137. Philosophy of Science (3) I
Prerequisite: Philosophy 1A.
A critical examination of the basic concepts and methods underlying contemporary scientific thought. Contributions of the special sciences to a view of the universe as a whole.

162. Continental Rationalism (3) I
(Offered in 1959-60 and alternate years)
Prerequisite: Philosophy 1A.
The origins, content, and contemporary significance of the rationalistic tradition, with reference primarily to the philosophies of Descartes, Spinoza, and Leibniz.

163. British Empiricism (3) II
(Offered in 1960-61 and alternate years)
Prerequisite: Philosophy 1A.
The origins, content, and contemporary significance of the empirical tradition, with reference primarily to the philosophies of Locke, Berkeley, and Hume.

164. American Philosophy (3) I
(Offered in 1959-60 and alternate years)
Prerequisite: Philosophy 1A.
A systematic and critical study of the work of American philosophers from the Puritans through the Pragmatists. Major emphasis is placed upon Peirce, James, Royce, Santayana, Dewey, and Whitehead.

166. Honors Course (Credit to be arranged) I, II
Refer to the Honors Program.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of instructor.

PHYSICAL EDUCATION

IN THE DIVISION OF HEALTH EDUCATION, PHYSICAL EDUCATION, AND RECREATION

Men's Department

Professors: Governali; Kasch; Scott; Terry; Ziegenfuss
Associate Professors: Benton (Chairman); Broadbent; Schutte; Smith, C. R.; Sportsman
Assistant Professors: Grawunder; Olsen, A. E.; Vitale

Women's Department

Associate Professors: Lockman; Schwob; Shannon (Chairman); Tollefson
Assistant Professors: Cave; Murphy, M. L.

A major in physical education is offered with the A.B. degree in *arts and sciences.* A teaching major in physical education is offered with the A.B. degree and special secondary credential in *teacher education.* Courses in the major are in addition to 45 units in general education courses.

A minor in a field other than physical education is required of physical education majors for the A.B. degree in *arts and sciences.* Students taking the special secondary credential are not required to complete a minor for the A.B. degree.

A teaching major in physical education leading to the general secondary credential in the postgraduate year is also offered. Students who plan to take the general secondary credential are advised to include a teaching minor for the credential in the undergraduate program.

A minor in physical education is offered in *arts and sciences.* Teaching minors in physical education are offered in teacher education for the general elementary, kindergarten-primary, and general secondary credentials.

MAJORS IN ARTS AND SCIENCES

Major for Men

Lower Division. Two units of physical education activity courses (which may be counted in general education); Physical Education 63, 64, 72, 74; Zoology 8 and 22.

Upper Division. 26 upper division units to include nine units from physical education courses numbered 141 to 148, inclusive; Physical Education 167, 168, 169, 170A, or 170B; and six units selected from courses in health education, physical education, or recreation.

Major for Women

Lower Division. Four units of physical education activity courses to include Physical Education 1A, 2A, 2B, 3A, 3B, 5A, 5B, and 6 (two of these units may be counted as general education); Physical Education 72, 74; and Zoology 8 and 22.

Upper Division. 26 upper division units to include Physical Education 151, 156A, 156B, 160, 167, 168, 170A or 170B; and nine units selected from courses in health education, physical education, or recreation.

MINOR IN ARTS AND SCIENCES

A minor in physical education is offered in arts and sciences. The minor consists of 15 to 22 units in physical education, nine units of which must be in courses carrying upper division credit. The minor should be planned in consultation with the department chairman.

MAJORS IN TEACHER EDUCATION

Special Secondary Credential in Physical Education

Special Secondary Credential in Physical Education. Students taking this credential must complete a teaching major in physical education and additional requirements in professional courses in teacher education.

Major for Men

Lower Division. In addition to two units of physical education activity courses in general education, the student shall complete Physical Education 63, 64, 72, 74, Health Education 65, and Zoology 8 and 22.

Upper Division. 25 upper division units to include Physical Education 141, 142 or 122, 145, 146, 161, 167, 168, 169, 170A or 170B, 190, and two units of upper division electives.

Professional Courses in Teacher Education. 22 upper division units to include Education 100, 110, 120, 121H, 180, and Health Education 151.

Major for Women

Lower Division. Physical Education 1A or 4, 2A, 2B, 3A, 5A, 5B, 6, 12A, 13A, 14A, 18A, 72, 74, and Zoology 8 and 22. (Two units of physical education activity courses may be counted in general education.)

Upper Division. 28 upper division units to include Physical Education 142 or 122, 151, 154A, 154B, 155, 156A, 156B, 160, 161, 167, 168, 170A or 170B, and 190.

Professional Courses in Teacher Education: 22 upper division units to include Education 100, 110, 120, 121J, 180, and Health Education 151.

General Secondary Credential

Major for the General Secondary Credential. A teaching major in physical education is offered for the general secondary credential. Students may complete requirements for this major and the general secondary credential in one of the following ways:

(1) By taking the special secondary credential in physical education with the A.B. degree; completing requirements in a teaching minor for the general secondary credential; and completing other credential requirements in a postgraduate year, to include four graduate units in physical education courses to be selected with approval of the adviser.

(2) By completing (a) the A.B. degree with a physical education major in arts and sciences and including or adding the following courses: for men, Health Education 65, Physical Education 141, 142 or 122, 145, 146, 161, and 190; for women, Physical Education 12A, 13A, 14A, 18A, and Physical Education 142 or 122, 154A, 154B, 155, 161, 170A or 170B, and 190; (b) a teaching minor for the general secondary credential; and (c) the credential requirements in a postgraduate year, to include six graduate units in physical education courses to be selected with approval of the adviser.

Refer to the section of the catalog on Professional Curricula in Teacher Education for a description of requirements in the postgraduate year.

MINORS IN TEACHER EDUCATION

General Secondary Credential

Minor for the General Secondary Credential. A teaching minor in physical education is offered for the general secondary credential. This minor, which may be used for the A.B. degree, consists of a minimum of 21 units.

Minor for Men. Lower division: Physical Education 72, 74, and two to four units of physical education electives (other than general education courses). Upper division: four units of professional activity courses to be selected in consultation with the departmental representative; Physical Education 161, 170A or 170B, and five to seven units of upper division electives in physical education.

Minor for Women. Lower division: Physical Education 1A, 2A-2B, 3A, 5A-5B, 6, 74, and three to four units of physical education electives. Upper division: Physical Education 151, 156A-156B, and five to six units from Physical Education 154A-154B, 170A, 170B, and 190.

General Elementary and Kindergarten-Primary Credentials

Minor for the General Elementary and Kindergarten-Primary Credentials. This minor is the same as the minor in arts and sciences. Courses should be selected in consultation with the departmental representative.

THE MASTER'S DEGREE

The master of arts degree for teaching service with a concentration in physical education is offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

REQUIRED ACTIVITY COURSES

To meet general education requirements, all lower division students must enroll in an activity course each semester. Four semesters of activity courses are required. Two units are needed for general education and graduation, but no more than one activity course in any one semester may be counted toward this requirement. An activity course taken in the summer session may be counted in lieu of a semester.

Exemptions or Postponements

Veterans who have served a minimum of one continuous year in the United States armed forces are exempted from the general education requirement in physical education. Students carrying fewer than 12 units during any semester may apply to the Chairman of the Physical Education Department for a postponement of the physical education activity requirement. For reasons of health, the Director of Health Services may postpone the enrollment of a student in a physical education activity course. Permanent postponement from the activity requirement will not be made and a postponement does not eliminate the graduation requirement.

Types of Activity Courses

A health history record is required of each student entering college. Individually adapted physical education classes to care for special needs are offered. The content of the required courses is planned to give each student an opportunity to participate in many activities of carry-over value, developmental nature, and recreational interest. An opportunity is afforded for students to participate in competitive sports and intramural programs.

MEN'S ACTIVITY COURSES

General Education Activity Courses

Activity courses numbered 1-25 are general education courses. The courses offered for one-half unit credit meet two hours per week, or equivalent. An activity course may be taken for credit only once.

1ABCD. Individual Adaptation (½) I, II
2. Basketball (½) I, II
3. Boxing (½) I, II
4. Gymnastics (½) I, II
5. Soccer (½) I, II
6. Softball (½) II
7. Touch Football (½) I, II
8. Track and Field (½) I, II
9. Volleyball (½) I, II
10. Wrestling (½) II
11. Ballroom Dancing (½) I, II
13. Archery (½) I, II
14AB. Badminton (½) I, II
15. Fencing (½) I, II
16. Golf (½) I, II
17. Handball (½) I, II
18AB. Tennis (½) I, II
19. Bowling (½) I, II
20AB. Swimming (½) I, II
21. Life Saving (1) I, II
(Meets three hours per week)
24. Hiking (½) I, II
25. Baseball (½) I, II

Intercollegiate Sports

An intercollegiate sport is not a general education course and therefore does not satisfy the physical education requirement. Courses in intercollegiate sports meet 10 hours per week.

30. Baseball (½) II
31. Basketball (½) I
32. Cross Country (½) I
33. Football (½) I
34. Golf (½) II
35. Gymnastics (½) II
36. Tennis (½) II
37. Track (½) II
38. Wrestling (½) II
39. Swimming (½) II

WOMEN'S ACTIVITY COURSES

General Education Activity Courses

Freshmen may choose from courses numbered 1-11 or 20AB. Sophomores may choose from all courses offered. Courses offered for one-half unit credit meet two hours per week. An activity course may be taken for credit only once.

1A-1B. Fundamental Skills (½) I, II

2A-2B. Folk, Square, and Round Dancing (Men and Women) (½) I, II
2A is a prerequisite for 2B.

3A-3B. Modern Dance (Men and Women) (½) I, II

3A is a prerequisite for 3B.

4. Tumbling and Related Activities (½) I, II
A course designed for majors and minors in physical education or recreation.

5A. Soccer, Speedball, Hockey (½) I, II

5B. Softball, Volleyball (½) I, II

6. Basketball (½) I, II

11. Ballroom Dancing (Men and Women) (½) I, II

12A. Advanced Modern Dance (Men and Women) (1) I, II
Four hours.
Prerequisites: P.E. 3A and 3B (except for physical education majors who are not required to take 3B).
Skill techniques, rhythmic form and analysis. Materials of design and group composition. Criticism of student sketches, studies and completed dances.

12B. Advanced Modern Dance (Men and Women) (1) I, II
Four hours.
Prerequisite: P.E. 12A.
Advanced skill techniques and group choreography. The use of percussion instruments and various forms of accompaniment. Discussion, lectures, practice.

13A. Archery (Beginning) (½) I, II

13B. Archery (Intermediate) (½) I, II

14A. Badminton (Men and Women) (Beginning) (½) I, II

14B. Badminton (Men and Women) (Intermediate) (½) I, II

15. Fencing (Men and Women) (½) I, II

16A. Golf (Beginning) (½) I, II

16B. Golf (Intermediate) (½) I, II

18A. Tennis (Beginning) (½) I, II

18B. Tennis (Intermediate) (½) I, II

19. Bowling (Men and Women) (½) I, II

20A. Swimming (For nonswimmers) (Men and Women) (½) I, II

20B. Swimming (Intermediate) (Men and Women) (½) I, II

21. Life Saving (1) I, II
Three hours.
Standard American Red Cross course in life saving and water safety, designed to qualify superior swimmers for Senior Life Saving Certificate.

24. Hiking (Men and Women) (½) I, II

MEN AND WOMEN

PROFESSIONAL THEORY COURSES

LOWER DIVISION COURSES

53. Physical Education in the Elementary School (3) I, II
Two lectures and two hours of laboratory.
The state program in physical education for the elementary school forms the basis of the course, including selection of materials, methods and techniques of teaching and practice in skills. Candidates for the elementary credential are required to take this course. Not open to students with credit for Physical Education 74 or Recreation 74.

63. Professional Activities (men) (2) II
(Same course as Recreation 63)
Five hours of lecture and laboratory.
Practice in the skills and techniques of the dance, and experience in the organization and presentation of dance materials. Not open to students with credit for Recreation 63.

64. Professional Activities (men) (2) I
Six hours of lecture and laboratory.
The acquisition of skills and teaching techniques, and the development of knowledge and interest in the combative activities, primarily wrestling and boxing.

72. Introduction to Physical Education (2) I, II
History and principles of physical education and sports. Study of the objectives of modern physical education with a view toward the development of a basic philosophy and background for professional education.

74. Elementary School Physical Education Activities (2) I, II
(Same course as Recreation 74.)
Physical education activities designed for the elementary school child; emphasis on the organization, supervision, and evaluation of the physical education program in the elementary school. Not open to students with credit for Physical Education 53 or Recreation 74.

UPPER DIVISION COURSES

***122. Water Safety Instruction (1) II**
Four hours of lecture and laboratory.
Prerequisites: P.E. 20B or equivalent, and American Red Cross Senior Life Saving Certificate.
Methods and materials for teaching swimming. Course designed to qualify expert swimmers for American Red Cross Swimming Instructors Certificate. A general education course in physical education.

141. Professional Activities: Gymnastics (men) (2) I
Six hours of lecture and laboratory.
Prerequisite: P.E. 4 or consent of instructor.
The development of skills and teaching techniques in gymnastics with emphasis on tumbling, apparatus activities, self-testing and calisthenics in the school program. Consideration of organizing, conducting, and officiating gymnastic meets.

142. Professional Activities: Swimming (men and women) (1) I, II
Four hours of lecture and laboratory.
Prerequisite: Intermediate swimming or consent of instructor.
The development of skills in swimming with emphasis on the teaching techniques. Scope of course is from beginning swimming to life saving techniques.

143. Professional Activities: Coaching Track (men) (1) I
Two hours of lecture and laboratory.
Organization of practice sessions and drills for developing fundamental skills and special abilities; study of rules and officiating techniques; consideration of scheduling problems, coaching techniques and meet strategy and organization.

144. Professional Activities: Coaching Baseball (men) (1) II
Two hours of lecture and laboratory.
Organization of practice sessions and drills for developing fundamental skills and special abilities; study of rules and officiating techniques; consideration of scheduling problems, coaching techniques and meet strategy and organization.

145. Professional Activities: Team Sports (men) (2) I
Six hours of lecture and laboratory.
The skills, rules, teaching techniques, officiating, and organization of materials in such sports as soccer, touch football, softball, speedball, basketball, volleyball, and other sports.

146. Professional Activities: Individual Sports (men) (2) II
Six hours of lecture and laboratory.
The skills, rules, teaching techniques, officiating, and organization of materials in such sports as handball, tennis, badminton, archery, golf, and other sports.

147. Professional Activities: Coaching Football (men) (1) I
Two hours of lecture and laboratory.
Organization of practice sessions and drills for developing fundamental skills and special abilities; study of rules and officiating techniques; consideration of scheduling problems, coaching techniques and game strategy.

148. Professional Activities: Coaching Basketball (men) (1) I
Three hours of lecture and laboratory.
Organization of practice sessions and drills for developing fundamental skills and special abilities; study of rules and officiating techniques; consideration of scheduling problems, coaching techniques and game strategy.

151. Folk Dance Materials and Advanced Techniques (women) (2) I
Three hours of lecture and laboratory.
Prerequisite: P.E. 2B.
Folk customs, festivals, and costumes. Selection of dance materials for various age groups. Analysis of teaching techniques.

153A-153B. Problems in Modern Dance (men and women) (2-2)
Year Course Beginning Semester I
Four hours of lecture and laboratory.
Prerequisite: P.E. 12B or consent of instructor. 153A is a prerequisite for 153B.
The construction and critical evaluation of the more complex forms of choreography.

154A-154B. Methods of Teaching Modern Dance (2-2) Year Course
Beginning Semester I
Four hours of lecture and laboratory.
Prerequisite: P.E. 12A.
Advanced skill techniques with emphasis upon individual choreography. Selection of materials and course planning for the secondary school. Class teaching experience. Brief survey of basic literature and current readings in the field.

155. Techniques of Individual Sports (women) (1) II
Two hours of lecture and laboratory.
Review of individual playing techniques, knowledge, rules, and teaching methods in tennis, archery, badminton, and golf. Designed for senior majors in physical education, who are expected to demonstrate a high degree of competency in the sports indicated.

156A-156B. Methods of Teaching Team Sports (women) (2-2) Year Course
Beginning Either Semester
Three hours of lecture and laboratory.
Prerequisites: P.E. 5A, 5B, 6.
Analysis of skills, teaching techniques, officiating, and the organization of materials in team sports for women.

157A-157B. Choreography in Contemporary Dance (men and women) (3-3)
Year Course Beginning Either Semester
Two lectures and three hours of laboratory.
Prerequisite: Consent of instructor.
Experimentation in the dance, relating contemporary theories to other art forms. The study of force and time-space relationships as factors in choreography. Production problems.

160. Teaching of Body Mechanics (women) (3) II
Three hours of lecture and laboratory.
Prerequisite: P.E. 167.
Efficient use of the body in daily living; evaluation and classification of exercises, study of methods, and practice in planning and presenting material.

161. Instructor's Course in First Aid (2) I, II
Three hours of lecture and laboratory.
Instructor's course in first aid, as outlined by the American Red Cross. Standard first aid techniques, care of injured, certification and record keeping, and practical work in first aid.

166. Honors Course (Credit to be arranged) I, II
Refer to the Honors Program.

167. Applied Anatomy and Kinesiology (3) I
Prerequisites: Zoology 8A and 8B.
Anatomical and kinesiological analysis of human structure and movement. Application of analysis relative to mechanical principles as influenced by efficiency factors of body functions.

168. Physiology of Exercise (3) II
Prerequisites: Zoology 8A and 8B.
A nonlaboratory course emphasizing the relation of physiology to muscular exercise in physical activities.

169. Adapted Activities (3) II
Three lectures and two hours of laboratory.
Prerequisites: Zoology 8A, 8B, and P.E. 167.
The adaptation of programs for the atypical individual, including physical examinations, training and prescribed exercises, followup, instructional problems, and evaluation.

170A-170B. Recreation Leadership (3-3) Year Course Beginning Semester I
(Same course as Recreation 170A-170B)
Principles and practices in recreation leadership. Course content of 170A includes organization of competition, intramurals, playground practices; content of 170B includes recreational arts and crafts, dramatics, social recreation, and music. Neither course is a prerequisite for the other. Not open to students with credit for Recreation 170A-170B.

190. Administration of Physical Education in the Secondary School (3) I, II
Problems and practices in the organization and administration of the secondary school activity program. Study, selection and adaptation of activities, examination and grouping of pupils, use and evaluation of tests. Selection and maintenance of equipment and facilities.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of special study adviser.

GRADUATE COURSES

200. Evaluation Procedures in Physical Education, Health Education and Recreation (3) I (Same course as Health Education 200)
A study of tests and measurements in the profession, with practice in their construction and use, and interpretation of results. Not open to students with credit for Health Education 200.

201. Developmental Physical Education (3)
Prerequisite: P.E. 167.
Intensive study of postural divergencies, lack of physical development, and methods of correcting such conditions through exercise. Practice in making physical examinations, constructing individual exercise programs, and teaching remedial exercises. Consideration of ethical procedures and limitations.

203. Problems in Physical Education (3)
A survey of current problems facing the physical education profession, through a review of literature, discussion of trends, and observation of school situations. Analysis and evaluation of actual problems. Written reports required.

204. Problems in Recreation (3) (Same course as Recreation 204)
A survey of current problems facing the recreation profession, through a review of literature, discussion of trends, and observation of school situations. Analysis and evaluation of actual problems. Written reports required. Not open to students with credit for Recreation 204.

205. Curriculum in Physical Education and Health Education (3)
(Same course as Health Education 205)
Analysis of current curricula in physical education and health education, with special emphasis upon curriculum construction and evaluation. Not open to students with credit for Health Education 205.

210. Seminar (3) I, II
Prerequisites: Major or minor in physical education, or a closely related area, and consent of instructor.
Seminars in physical education are offered for intensive study in each of the fields listed below.
A. Facilities–indoor and outdoor activity areas.
B. Competitive Athletics for Men–major and minor sports.
C. History and Philosophy of Physical Education.
D. Women's Sports Programs.
E. Dance Programs.

298. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of special study adviser.

299. Thesis (3)
Prerequisites: An officially appointed thesis committee and advancement to candidacy.
Guidance in the preparation of a project or thesis for the master's degree.

PHYSICAL SCIENCE

IN THE DIVISION OF PHYSICAL SCIENCES

Associate Professor: Stewart, P. E. (Chairman)
Assistant Professors: Merzbacher; Nelson, B.

A major in physical science is offered with the A.B. degree in *arts and sciences* and in *teacher education.* Courses in the major are in addition to 45 units in general education courses, except that nine units in chemistry, physics, and mathematics may be counted in general education. A minor for the bachelor's degree is not required of students with a physical science major. Students who plan to take the general secondary credential are advised to complete a teaching minor for the credential in the undergraduate program.

PHYSICAL SCIENCE MAJOR

The major in physical science with the A.B. degree in *arts and sciences* is available to students who have been admitted to teacher education and have completed at least eight units of professional education courses by date of degree candidacy.

Lower Division. Chemistry 1A-1B, Physics 4A-4B-4C or 2A-2B-3A-3B, Mathematics 50 and 51. Recommended: Mathematics 52.

Upper Division. 24 upper division units to include a minimum of seven units in each of chemistry and physics. The following courses must be included: Chemistry 101A, two units of Physics 120, and either Physics 101 or Physical Science 130. Recommended: Physical Science 150 and Industrial Arts 185. Additional courses to complete the major must be selected with approval of the adviser. Recommended electives: Geography 153, Zoology 119-S.

PHYSICAL SCIENCE MINOR

A minor in physical science is offered in *arts and sciences* to students who have been admitted to teacher education and have completed at least eight units of professional education courses by date of degree candidacy. The minor consists of a minimum of 20 units to include three or more units in at least three of the following fields: Astronomy 1; Biology 3 and 4, or Biology 5; Chemistry 2A-2B or 1A-1B; Geology 2 or 1A; Physics 2A-2B-3A-3B or 4A-4B-4C.

PHYSICAL SCIENCE AND GENERAL SCIENCE MAJOR IN TEACHER EDUCATION

General Secondary Credential

Major for the General Secondary Credential. A teaching major in physical science and general science is offered for the general secondary credential. Requirements for this teaching major may be met by completing in arts and sciences a major in physical science with the A.B. degree or a major in chemistry or physics with the A.B. or B.S. degree, and in addition to the major, the following lower division courses: Astronomy 1, Biology 3 and 4, or Biology 5, and Geology 2 or 1A. These courses may be counted in general education. Recommended: Industrial Arts 5, 6, or 85.

Additional Credential Requirements

Requirements for the general secondary credential include completion of a bachelor's degree, the teaching major in physical science and general science, a teaching minor for the credential, and the credential requirements in a postgraduate year, to include four graduate units selected from Chemistry 200 (2-4 units), Physics 200 (2-4 units), or Physical Science 200 (2-4 units).

Refer to the section of the catalog on Professional Curricula in Teacher Education for a description of requirements in the postgraduate year.

PHYSICAL SCIENCE AND GENERAL SCIENCE MINOR IN TEACHER EDUCATION

General Secondary Credential

Minor for the General Secondary Credential. A teaching minor in physical science and general science is offered for the general secondary credential. This minor, which may be used for the A.B. degree, is available to students who have been admitted to teacher education and have completed at least eight units of professional education courses by date of degree candidacy. The minor consists of a minimum of 26 units to include the following courses: Astronomy 1; Biology 3 and 4, or Biology 5; Chemistry 2A-2B or 1A-1B; Geology 2 or 1A; Physics 2A-2B-3A-3B or 4A-4B-4C. Recommended electives: Astronomy 9, Geology 3, Chemistry 101A, Geography 3, 153, Physical Science 130, 150, Physics 101, Botany 119-S or Zoology 119-S, and Industrial Arts 5, 6, and 85.

LOWER DIVISION COURSES

***1. Introduction to Physical Science (3) I, II**
The nature of the physical universe, with emphasis on the whole field of physical science, rather than on its separate divisions. Materials chosen primarily from astronomy and physics. No prerequisites. Not open to students with previous credit for or concurrent enrollment in a college lecture course in physics or astronomy, or Physical Science 5. This course is a general education course in physical science which may be followed by or taken with Astronomy 9 for laboratory credit in natural science.

***2. Introduction to Physical Science (3) I, II**
Continuation of Physical Science 1, with emphasis on materials chosen primarily from chemistry and geology. It is recommended but not required that Physical Science 1 be taken first. Not open to students with previous credit for or concurrent enrollment in a college lecture course in chemistry or geology. This course is a general education course in physical science which may be followed by or taken with Geology 3 for laboratory credit in natural science.

***5. Man and His Physical World (3) I, II**
Selected topics in physical science. The relations of physical science to modern life through emphasis on the scientific method. Designed for those intending to take only one semester of physical science. A general education course in physical science. May be followed by or taken with Astronomy 9 or Geology 3 for laboratory credit in natural science. Physical Science 5 is not open to students with credit for Physical Science 1 or 2.

UPPER DIVISION COURSES

120. Physical Science for Elementary Teachers (3) II, Summer
An integrated study of the physical sciences for teachers in order to provide a broad background of information, a consideration of current developments, and an opportunity for individualized work. Enrollment limited to those in training for or engaged in teaching in the elementary schools.

***130. Modern Physical Science (3) II**
Recent and current developments in the physical sciences. Discussions concerning such phenomena as radioactivity, cosmic rays, nuclear energy, tracer techniques, radio telescopy, supergalaxies. A general education course in physical science. Not open to students who have credit for Physics 4A, 4B, 4C, or equivalents.

140S. Contemporary Problems in Physical Science (1) Summer
A series of six weekly lectures on varied aspects of physical science by scientists engaged in research. Reading and reports required of students enrolled for credit. These lectures are open to the public.

***150. Readings in the Physical Sciences (3) I**
Readings from selected materials with informal class discussion of topics. A general education course in physical science.

PHYSICS

IN THE DIVISION OF PHYSICAL SCIENCES

Professors: Moe, Skolil (Chairman); Smith, L. E.
Associate Professors: Garrison; Smith, N. B.; Snodgrass; Teasdale
Assistant Professors: Abraham; Coleman; Doolittle; Morris; Sogo; Terhune; Wilson, A. N.; Wolter
Lecturers: Alexander; Alfano; Berlad; Eastman; Ehricke; Halsey; Hansen, H. J.; Kalbfell; Medved; Rostoker; Smith, Geo.; Smyth

Arts and Sciences. A major in physics is offered with the A.B. or B.S. degree in arts and sciences. Courses in the major are in addition to 45 units in general education courses, except that nine units in physics, chemistry, and mathematics may be counted in general education. A minor in mathematics is required of physics majors for the A.B. degree. A minor is not required for the B.S. degree. The major is described below.

A minor in physics is offered in arts and sciences.

Teacher Education. A teaching major in physical science and general science, with physics as the basic major, is offered for the general secondary credential. The major for this credential is described below. Students who plan to take the general secondary credential are advised to include a teaching minor for the credential in the undergraduate program.

PHYSICS MAJORS

Major With the A.B. Degree

Lower Division. Physics 4A-4B-4C; Chemistry 1A-1B, or their equivalents. Recommended: a reading knowledge of French or German.

Upper Division. 24 upper division units in physics to include Physics 101, 103, 105, 107, 110, 198A, 198B; and either two units of Physics 120 or 148A. Students who plan to do advanced work in physics should include Physics 106, 112, 151, 170, and 175 to have minimum preparation acceptable at most graduate schools. Electives must be approved by the department.

Minor in Mathematics Required. A minor in mathematics is required, consisting of Mathematics 50, 51, and 52, or their equivalents, Mathematics 118A, 118B, and three units from Mathematics 104, 111, 119, 121A, or 124.

Major With the B.S. Degree

Lower Division. Physics 4A-4B-4C; Chemistry 1A-1B; Mathematics 50, 51, and 52, or their equivalents.

Upper Division. 36 upper division units to include Physics 101, 103, 105, 107, 110, 198A, and 198B; Mathematics 118A and 118B. The program, planned in consultation with the departmental adviser for this degree, must be designed to provide either a four-year terminal program or preparation to enter the graduate program toward a master of science degree. The following courses are required as part of two options approved under this degree:

Applied Physics. Physics 106, 112; either four units of Physics 120 or 148A and 148B; and three units selected from Physics 114, 151, 170, and 180. Electives must be approved by the department.

Electronics. Physics 104A, 104B, 123, 124, and 160.

PHYSICS MINOR

A minor in physics is offered in arts and sciences. The minor consists of 15 to 22 units in physics, six units of which must be in courses carrying upper division credit.

MAJOR IN TEACHER EDUCATION

General Secondary Credential

Major for the General Secondary Credential. A teaching major in physical science and general science is offered for the general secondary credential. Requirements for this teaching major may be met by completing the A.B. or B.S. degree in arts and sciences with a major in physics or chemistry, or the A.B. degree with a major in physical science, and in addition to the major, the following lower division courses: Astronomy 1, Biology 3 and 4, or Biology 5, and Geology 2 or 1A. (These courses may be counted in general education.)

Recommended lower division electives: Astronomy 9, Geography 3, Geology 3, Industrial Arts 5, 6, 85. Recommended upper division electives, if not included as part of the major: Botany 119-S, Chemistry 101A, Physics 101, 120, Zoology 119-S, and Geography 153.

Requirements for the general secondary credential include completion of a bachelor's degree, the teaching major in physical science and general science, a teaching minor for the credential, and the credential requirements in a postgraduate year, to include four graduate units selected from Physics 200 (2-4 units) and Chemistry 200 (2-4 units).

Refer to the section of the catalog on Professional Curricula in Teacher Education for a description of requirements in the postgraduate year.

THE MASTER'S DEGREE

The master of arts degree with a major in physics, the master of arts degree for teaching service with a concentration in physics, and the master of science degree in applied physics are offered. The master of science degree may be in the fields of applied physics, electronic science, or nuclear technology. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

LOWER DIVISION COURSES

Note: A maximum of 12 units of lower division physics credit may be applied toward the A.B. or B.S. degrees.

***2A-2B. General Physics (3-3) Year, I, II**

Lectures, demonstrations and discussions.

Prerequisites: Two years of high school mathematics. Physics 2A is a prerequisite for 2B. Recommended: Concurrent registration in Physics 2A and 3A, and in Physics 2B and 3B.

This course is for liberal arts and certain preprofessional students who do not desire intensive physics preparation. 2A properties of matter, mechanics, heat, and sound; 2B, light, electricity, magnetism, and atomic physics. A psysical science general education course in the area of natural science.

***3A-3B. Physical Measurements (1-1) Year, I, II**

Three hours of laboratory.

Prerequisite for Physics 3A: Credit or concurrent registration in Physics 2A.

Prerequisite for Physical 3B: Credit or concurrent registration in Physics 2B.

A laboratory course to accompany Physics 2A-2B. 3A: properties of matter, mechanics, heat and sound. 3B: electricity, magnetism, and light. A physical science general education course, either semester of which meets the laboratory requirement in natural science.

4A-4B-4C. Principles of Physics

Three lectures and three hours of laboratory.

The following sequence of three courses is designed to give a thorough background in the fundamental principles of physics, with applications to practical problems.

4A. Mechanics and Sound (4) I, II

Prerequisite: Credit or concurrent registration in Mathematics 50.

The mechanics of solids and fluids; wave motion and sound.

4B. Electricity (4) I, II

Prerequisites: Physics 4A with a grade of C or better and credit or concurrent registration in Mathematics 50.

Magnetism, electricity and elementary electronics.

4C. Heat, Light and Introduction to Modern Physics (4) I, II

Prerequisites: Physics 4B with a grade of C or better and credit or concurrent registration in Mathematics 51.

Heat and thermodynamics, kinetic theory, light and introduction to modern physics.

***5. Practical Physics (4) II**
Three lectures and three hours of laboratory.

Everyday application of physics in heating, lighting, insulating, cooking, nursing, refrigeration, air-conditioning, sound, music, mechanical and electrical appliances. Not open to students with credit for Physics 2A, 2B, 4A, 4B, or 4C. A general education course in physical science which also meets the laboratory requirement in natural science.

UPPER DIVISION COURSES

101. Modern Physics (3) I, II
Prerequisites: Physics 4C; or Physics 2B and a working knowledge of the calculus.

Modern developments in physics, including an introduction to the quantum and relativity theories, and to the fields of atomic, nuclear and solid state physics.

103. Basic Electronics (3) I, II
Prerequisites: Physics 4B; or 2B and 3B and a working knowledge of the calculus.

A qualitative survey of electron tubes, amplifiers, and electronic systems.

104A-104B. Vacuum Tube Circuit Design (3-3) I, II
Prerequisites: Physics 103 and 110 with minimum grades of C, or consent of instructor.

The theory of coupled circuits, transients and networks. Resistance loaded amplifiers; negative feedback and applications to regulated power supplies, cathode followers, and DC amplifiers. Power amplifiers, oscillators, modulators and detectors.

105. Analytical Mechanics (3) I, II
Prerequisites: Physics 4C and Mathematics 118A.

Principles of Newtonian mechanics developed through the use of vector methods. Statics and dynamics of particles and rigid bodies.

106. Optics (3) II
Prerequisites: Physics 4C, or Physics 2B and 3B.

A study of reflection, refraction, dispersion, interference, diffraction, double refraction and polarization, with applications to optical instruments. Also wave propagation, radiation, spectra and the nature of light.

107. Electrical Measurements (2) I, II
One lecture and three hours of laboratory.

Prerequisite: Concurrent registration in Physics 110, or consent of instructor. (For geophysics students, concurrent registration in Mathematics 118A.)

Laboratory techniques in the measurements of current, voltage, resistance, capacitance, inductance, power, and magnetism. Solution of associated problems; data handling and error analysis.

110. Electricity and Magnetism (3) I, II
Prerequisites: Physics 4C and concurrent registration in Mathematics 118A; or consent of instructor.

Analysis of direct and alternating current circuits using the operator "j" and circuit theorems; introduction to coupled circuits, resonance and transients. Electrostatics; dieletrics and conductors. Chemical, photo and thermal effects. Electromagnetism, and magnetic properties.

112. Thermodynamics and Kinetic Theory (3) I
Prerequisites: Physics 4C and Mathematics 52.

Thermal properties of matter, laws of thermodynamics, kinetic theory of gases, and an introduction to statistical mechanics.

114. Acoustics (3) I
Prerequisites: Physics 103, 105, and 110.

Wave motion and its application to the production, transmission and reception of sound. Development of acoustic circuits using electro-acoustic analogues.

120. Advanced Laboratory (2-4) I, II
Prerequisite: Consent of instructor.

Advanced experimental measurements in the fields of classical and modern physics, such as: acoustics, optics, heat and thermodynamics, mechanics, electricity and magnetism, atomic and nuclear physics. With the consent of the instructor and the adviser the course may be repeated in the same subject but with new material for additional credit.

121. Radiation Physics (3) I, II
Two lectures and three hours of laboratory.
Prerequisites: Physics 2A-2B and 3A-3B.

X-rays, radioactivity, interactions of radiations with matter, and methods of measurement. May not be used in the physics major. Not open to students with credit in Physics 101.

123. Electronics Laboratory (2) I, II
One lecture and three hours of laboratory.
Prerequisites: Physics 107 and concurrent registration in Physics 104A; or consent of instructor.

An experimental study of electron tubes and their associated circuits. Study of cathode ray oscilloscope, vacuum tube voltmeter, characteristics of power supplies, amplifiers and filter systems.

124. Radio Measurements (2) I, II
One lecture and three hours of laboratory.
Prerequisites: Physics 123 and credit or concurrent registration in Physics 104B; or consent of instructor.

Laboratory measurements of the parameters of resonant circuits at radio frequencies. Study of the properties of oscillators, modulators, detectors and wave guides.

125. Microwave Measurements (2) I
One lecture and three hours of laboratory.
Prerequisites: Physics 107 and 160 or 170.

Propagation of microwaves on coaxial lines and in wave guides. Power and impedance measurements. Resonant cavities. Klystron and other oscillators. (Formerly Physics 171.)

126. Solid State Devices Laboratory (2) II
One lecture and three hours of laboratory.
Prerequisites: Physics 103, 107, and 110.

Experiments with diodes, crystal rectifiers, transistors, transistor amplifiers, oscillators, modulators, wave-shaping and control circuits, magnetic and dielectric amplifiers, photoelectric and thermoelectric devices.

148A-148B. Nuclear Physics Laboratory (3-3) Year, II
One lecture and six hours of laboratory.
Prerequisite: Physics 151 should be taken concurrently with Physics 148A.

Techniques and instrumentation for the detection, indentification and measurement of the properties of nuclear radiations and particles, and their use in the study of nuclear reactions.

151. Nuclear Physics (3) I, II
Prerequisites: Physics 101 with a minimum grade of C and credit or concurrent registration in Physics 105.

Nuclear phenomena, theory of the nucleus, cosmic rays, and high-energy reactions of particles.

153. Servo-System Design (3) I
Prerequisites: Differential equations and Physics 103; or consent of instructor.

Regulatory systems, including servomechanisms by the Laplace Transform. System performance and stability. Practical components and examples of typical designs.

154. Television Circuits (3) II
Prerequisites: Physics 104B.

The principles, analysis and design of television transmitting and receiving systems. Special operational mathematics techniques will be included.

155. Analogue Computers (3) II
Prerequsites: Physics 103 and Math 118B.
Electronic integration and differentiation; solution of differential equations; multiplication, division and function generation; simulation of mechanical systems varying with time, solution of typical problems; auxiliary equipment, layout of large installations.

156. Digital Computers (3) I
Prerequisites: Physics 103 and Math 118B.
The binary number system; electronic and magnetic flip-flop circuits; memory devices; programming; complete computer systems. Auxiliary equipment for inserting information and reading out results rapidly. Typical applications and limitations.

160. Circuit Analysis (3) I, II
Prerequisites: Physics 103 and 110 with minimum grades of C, or consent of instructor.
Filter design, transmission lines, and network analysis.

166. Honors Course (Credit to be arranged) I, II
An individual study arrangement for students admitted to the Honors Program. Enrollment through the department chairman, subject to the approval by the Committee on Honors. Refer to the Honors Program.

167. Transistor Circuits (3) I
Prerequisite: Physics 104B or consent of instructor.
Properties of transistors and their application to amplifiers, oscillators and trigger circuits.

170. Electromagnetic Theory (3) II
Prerequisites: Physics 110 and credit or concurrent registration in Mathematics 118B; or consent of instructor.
Electrostatics and magnetostatics treated by vector methods; Maxwell's equations, electromagnetic induction, radiation and wave propagation.

175. Advanced Mechanics (3) I
Prerequisites: Physics 101, 105, and Math. 118B.
Special theory of relativity, generalized co-ordinates, Lagrangian and Hamiltonian formulations, normal co-ordinates and theory of vibrations, and introduction to quantum and wave mechanics.

180. Solid State Physics (3) II
Prerequisites: Physics 110, 112, and 175.
Elastic, thermal, electric, magnetic and optical properties of solids. Introduction to the energy band theory of solids, with applications to dielectrics, semi-conductors, and metals.

190. Theoretical Physics (3) II
Prerequisites: Mathematics 118B, Physics 110, 112, and 151.
Applications of partial differential equations to various physical problems. Problems include use of Laplace's equation, Poisson's equation, the diffusion equation, the wave equation and Schroedinger's equation.

196. Advanced Physics (2 or 3) I, II
Prerequisite: Consent of instructor.
Selected topics in classical and modern physics. May be repeated with the approval of the instructor for a total of six units.

198A. Senior Report (1) I
One discussion period.
Prerequisite: An acceptable master plan for graduation within one year.
Selection and design of individual project; oral and written progress reports.

198B. Senior Report (2) II
Prerequisite: Physics 198A.
Laboratory work, progress reports, oral and written final reports. Six hours of laboratory per week.

199. Special Study (1-6) I, II
Individual study or laboratory work on a special problem in physics selected by the student. Each student will be assigned a member of the staff who will supervise his work. Credit, hours and topics to be arranged in each case. Six units maximum credit.

GRADUATE COURSES

200. Seminar (2 or 3) I, II
An intensive study of one phase of physics, such as: mechanics, heat and thermodynamics, acoustics, radio wave propagation, electronics, atomic nuclear and solid state physics. May be repeated with new subject matter for additional credit.

205. Theoretical Mechanics (3) (I in 1960) (II in 1962)
Prerequisite: Physics 175 or consent of instructor.
An intensive study of mechanics utilizing vector and tensor methods. Study of the motion of rigid bodies, vibration, coupled circuits. Lagrange's and Hamilton's equations. Principle of least action.

210A-210B. Mathematics of Physics (3-3) Year Course Beginning Semester I
(Same course as Mathematics 210A-210B.)
Prerequisite: Admission into a master's degree program.
Selected topics from matrix theory, vector and tensor analysis, orthagonal function theory, calculus of variations and probability theory with particular emphasis on applications to physical theory. Not open to students with credit for Math 210A-210B.

240A-240B. Reactor Materials Technology (3-3) Year Course Beginning Semester I
Prerequisites: Physics 180 and 190; Chemistry 161.
A study of certain engineering, chemical, and nuclear properties of materials used in reactors, and of the influence of the reactor environment on these properties.

245A-245B. Reactor Theory (3-3) Year Course Beginning Semester I
Prerequisite: Physics 190.
Theory of chain reactions and their application to the operation of various types of reactors. Kinetics, theoretical design, and control of reactors in relation to the fundamental nuclear processes.

246. Problems in Reactor Design Parameters (3) II
Prerequisites: Concurrent registration in Physics 240B, 245B, and 248B.
A combined seminar and group project course in which the class will be assigned a specific, detailed reactor problem. Subgroups will work on specific problems within the main reactor design problem.

248A-248B. Reactor Laboratory (2-2) Year Course Beginning Semester I
Prerequisites: Chemistry 161, Physics 148B, and concurrent registration in Physics 245A-245B.
Measurement of the static and dynamic characteristics of a reactor. Reactor operation, reactor radiations, neutron flux properties and temperature effects. Use of the reactor as an experimental tool.

251. Nuclear Physics (3) II
Prerequisites: Physics 151 and 175; or consent of instructor.
Applications of quantum theory to nuclear physics. Theory of nuclear forces, nuclear reactions, interaction of radiation with matter, radioactivity, nuclear structure and high energy physics.

260. Advanced Electronics (3) II
Prerequisites: Physics 104B and 160; or consent of instructor.
Selected advanced topics in contemporary electronics.

270. Electromagnetic Theory (3) I
Prerequisite: Physics 170 or consent of instructor.
Boundary value problems; time varying electric and magnetic fields; propagation of radiation; antennas, wave guides.

275. Quantum Mechanics (3) I
Prerequisites: Physics 151 and 175; or consent of instructor.
The physical basis of quantum mechanics. Schroedinger's wave equation, and Heisenberg's matrix mechanics. Quantum theory of radiation, molecular, and nuclear systems. Approximation methods.

280. Theory of the Solid State (3) II
Prerequisites: Physics 180 and 275.
The energy band theory of solids, with applications to the electrical and optical properties of dielectrics, semi-conductors, and metals.

290. Bibliography (1)
Exercise in the use of basic reference books, journals, and specialized bibliographies, preparatory to the writing of a master's project or thesis.

296. Directed Field Experience (1-6)
Meets the requirement of directed field experience for candidates for the master of science degree, but is not limited to candidates for the degree. Required in addition to the 30-unit requirement for the degree.

298. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of staff: to be arranged with department chairman and instructor.
Individual study. Six units maximum credit.

299. Thesis (3)
Prerequisites: An officially appointed thesis committee and advancement to candidacy.
Guidance in the preparation of a project or thesis in physics for the master's degree.

POLITICAL SCIENCE

IN THE DIVISION OF SOCIAL SCIENCES

Professors: Bigger; Generales; Leiffer (Chairman); Wilcox
Associate Professors: Janssen; Joy
Assistant Professors: Crain; Gripp; Kitchen; Padgett
Lecturers: Earnest, L. E.; Harmon; House; Swanson; Weiser

Three majors leading to the A.B. degree are offered by the Department of Political Science: (1) a major in political science, (2) a major in public administration, and (3) a major in public personnel management. Courses in the major are in addition to 45 units in general education courses. Students majoring in political science are required to complete a minor approved by the department chairman. A minor is not required of students majoring in public administration or in public personnel management.

Two minors are offered by the department: (1) a minor in political science and (2) a minor in public administration.

Two certificate (nondegree) programs are also offered by the Department of Political Science: (1) certificate in public administration and (2) certificate in public welfare administration.

Students preparing to work in government service may wish to follow one of the programs named above, take minor work in political science or public administration, or advanced study for a master's degree. Also available is a program in Latin American studies, offered as a social science major by the Division of Social Sciences.

MAJOR IN POLITICAL SCIENCE

Major in Political Science. Lower division: Political Science 1A-1B or 71A-71B. Upper division: 24 upper division units to include (a) three units in Political Science 197 or 198 and (b) 21 upper division units in political science distributed among at least three of the following groups: Group I, Political Theory, courses numbered 100 to 114; Group II, Politics, courses numbered 115 to 129; Group III, Public Law, courses numbered 130 to 139; Group IV, Public Administration, courses numbered 140 to 164; Group V, International Relations, courses numbered 165 to

179; Group VI, Comparative Government, courses numbered 180 to 195; *provided,* that at least two units of the required 21 shall be taken from Group I.

Students majoring in political science are advised to become as familiar as possible with related social science fields. It is recommended that majors have a reading knowledge of at least one foreign language.

MAJOR IN PUBLIC ADMINISTRATION

Major in Public Administration. Lower division: Political Science 71A-71B and Economics 1A-1B. Upper division: 36 upper division units to include Political Science 140A-140B and 197 or 198, Economics 131, a three-unit upper division course in statistics, and additional courses selected with approval of the departmental adviser. Four additional units in upper division electives are required to complete the minimum of 40 upper division units required for graduation. A program in public administration can also be obtained through a major in political science by including appropriate courses. Students electing the field of public administration should plan their programs in consultation with an adviser in public administration.

MAJOR IN PUBLIC PERSONNEL MANAGEMENT

Major in Public Personnel Management. Lower division: Political Science 71A-71B, Economics 1A-1B, Psychology 1 (may be counted in general education) and Psychology 11. Upper division: Political Science 140A-140B, 144, 145, 146, 198; Economics 150, 151, 185; Psychology 104A, 105, 121, 152 (37 units). Another political science course may be substituted for Political Science 198 on the basis of individual counseling. Recommended in addition to the major: Business Administration 134, Economics 131, Political Science 142, 143, 155, and Psychology 131.

MINOR IN POLITICAL SCIENCE

Minor in Political Science. A minor in political science is offered in arts and sciences. The minor consists of 15 to 22 units in political science, nine units of which must be in courses carrying upper division credit.

MINOR IN PUBLIC ADMINISTRATION

Minor in Public Administration. A minor in public administration is offered in arts and sciences. The minor consists of Political Science 71A-71B in the lower division; and Political Science 140A-140B and three units from 197 or 198 or other approved upper division political science course.

CERTIFICATE (NONDEGREE) PROGRAMS

Certificate in Public Administration. Admission to candidacy for the certificate in public administration is open to public service employees who are also qualified for and gain admission to the college. Previous academic experience is not a prerequisite for beginning work on the certificate program. Candidacy will be established, however, by approval of the Coordinator of Public Administration. To receive the certificate in public administration, the candidate must complete an approved pattern of eight courses, with a grade point average of 2.5.

Certificate in Public Welfare Administration. Admission to candidacy for the certificate in public welfare administration will be established by approval of the Coordinator of Public Administration. To receive the certificate in public welfare administration, the candidate must complete an approved pattern of 30 units in courses at San Diego State College with a grade point average of 3.0. Prerequisites for admission to candidacy are 20 units in approved social sciences courses and eligibility to enroll in the college.

Candidates for these certificate programs may obtain further information on requirements by writing to the Coordinator of Public Administration, San Diego State College.

PUBLIC AFFAIRS RESEARCH INSTITUTE

The Public Affairs Research Institute is an agency of San Diego State College. It is organized to conduct research on a nonprofit basis into community and governmental problems of a public and/or administrative nature. The institute is staffed by members of the faculty of San Diego State College and operates under the advisory supervision of a board appointed by the president of the college. Closely associated with the institute is the Public Administration Laboratory with a specialized and growing collection of research materials. The institute engages in cooperative or joint research efforts with the various departments of instruction, institutes and research centers of the college. Administration of the institute is under a director.

THE MASTER'S DEGREE

The master of arts degree with a major in political science, the master of arts degree for teaching service in social science with a concentration in political science, the master of arts degree in personnel supervision and training, and the master of science degree in public administration are offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

LOWER DIVISION COURSES

***1A. Introduction to Government (3) I, II**
Theories and principles of government, with special attention to the problems created by modern industrialism and population pressures. A general education course in the social sciences.

***1B. Introduction to Government (3) I, II**
A comparative survey of selected foreign governments: their constitutional principles, political institutions, and governmental problems. A general education course in the social sciences.

***71A-71B. Introduction to American Government and Politics (3-3) Year, I, II**
Semester I: Governmental organization in the United States; the federal system; the organization, powers and functions of the legislative, executive and judicial branches of the government; the relations between federal, state and local units of government.

Semester II: Expansion of governmental functions and the development of means of democratic control; an examination of the increased use of government as an instrument of social control; the history, motivation, methods and control of political parties; nominations, elections and minority groups; pressure politics.

This year course meets the graduation requirement in American history, institutions and ideals. The first semester course, 71A, also meets the requirement in United States Constitution; and the second semester course, 71B, meets the requirement in California state and local government. This course is a general education course in the social sciences.

UPPER DIVISION COURSES

Political Theory (Group 1)

***105. American Political Thought (3) I, II**
A survey of the development of American ideas concerning political authority from the period of colonial foundation to the present time. A general education course in the social sciences.

***107A-107B. Constitutional Government (2-2) Year Course Beginning Semester I**
Modern government and politics; its theoretical foundations, institutions and problems. Emphasis will be on American experience with useful comparisons with other countries. Either semester may be taken first. A general education course in social science. This year course meets the graduation requirement in the United States Constitution. The second semester course, 107B, also meets the graduation requirement in California state and local government.

***111A-111B. Theory of the State (3-3) Year Course Beginning Semester I**
(Same course as Philosophy 111A-111B)
The nature of the State, its organization and activities, and its relation to the individual and other states. A general education course in social science. Not open to students with credit for Philosophy 111A-111B.

***112. Modern Political Thought (3) I, II**
Concepts concerning the nature of the state from Burke to the present. A general education course in social science.

Politics (Group II)

***115. American Institutions (3) I, II**
The principles of the Constitution of the United States of America, and a survey of the political and social institutions which have developed under the Constitution. A general education course in social science which also meets the graduation requirement in the United States Constitution and California state and local government.

120. Political Parties (3) I
A critical analysis of the political party as a part of the process of government; party organization and activities; nominating and campaign methods; theories and functions of the party system; party responsibility. Special emphasis will be placed upon the function of the two-party system in American government.

121. Basic Factors in American Politics (3) I, II
An analysis of American political, legal, economic, and social factors in their relation to our political system and the public interest.

122. Propaganda and Public Opinion (3) II (Same course as Journalism 132)
A study of the forces which mold the American public mind, the practice of propaganda, a description and analysis of public relations, pressure groups and their effect in American public life. Not open to students with credit for Journalism 132.

123-S. Contemporary American Politics (3) Summer
A consideration of a selected group of current major political problems in terms of their possible future implications and of their relationship to established American democratic principles and ideals.

125. The Legislative Process (3) I, II
A detailed analysis of legislatures. Special attention will be devoted to the impact of dynamic factors on formal procedures.

Public Law (Group III)

136. Administrative Law (3) II
The law of public office and public officers, powers of administrative authorities, scope and limits of administrative powers, remedies against administrative action.

***138. Introduction to Jurisprudence (3) I**
The development of legal systems and theories of the function of law. A general education course in social science.

***139A-139B. American Constitutional Development (3-3)**
Year Course Beginning Semester I
A study of the work of the Convention of 1787 and of significant phases of American constitutional law. A general education course in social science which also meets the graduation requirement in American history, institutions and ideals, and United States Constitution. The second semester course, 139B, also meets the graduation requirement in California state and local government.

Public Administration (Group IV)

140A-140B. Principles of Public Administration (3-3)
Year Course Beginning Semester I
Semester I: The administration of public services, staff and line functions, theories of organization and practices, and procedures of different types of governmental agencies.

Semester II: Principles and problems in governmental budgeting, performance and capital outlay, budget procedures, organization and administration of personnel programs, controls over administrative behavior, responsible bureaucracy and professionalism in the public services.

141. Government Report Writing (2) I
Actual writing problems in government, including surveys, recommendations, studies, analysis, progress reports, annual reports, etc., are discussed and their solutions analyzed. Attention to methods of collecting and organizing data, and practice in effective presentation of facts and ideas. Special consideration is given to problems of class members.

142. State Government (3) I, II
A study of the political structure and its operation used in the carrying on of the functions exercised by the states; state-federal relations; state-local government relations; particular emphasis on California government. This course meets the graduation requirement in California state and local government.

143. Municipal and County Government (3) I
A study of the organization and its operation used to carry into effect the functions assigned to local governmental units; particular emphasis upon local government in California. This course meets the graduation requirement in California state and local government.

144. Introduction to Public Personnel Administration (3) I, II
Prerequisite: Consent of instructor.
An introduction to the field, giving general coverage of the problems involved in recruitment, placement, supervision, etc., of public employees.

145. Human Relations in Management (3) I, II
(Same course as Business Administration 145)
Prerequisite: Political Science 144.
Human factors in supervision and management. Problems of incentives, attitudes, communication, and other personal relations between employee and employer. Bases of effectiveness of various types of leadership. Discipline and grievance. Not open to students with credit for Business Administration 145.

146. Wage and Salary Administration (3) I
(Same course as Business Administration 146)
Prerequisite: Political Science 144.
Job analysis; major techniques of job evaluation; problems of wage and salary administration, incentive pay methods; merit rating plans. Not open to students with credit for Business Administration 146.

148. The Government of Metropolitan Areas (3) I, II
A study of the governmental problems of metropolitanism; overlapping of governments, services, planning and financing. The use of intergovernmental contracts for public service, proper public service areas, and special authorities. This course meets the graduation requirement in California state and local government.

151. California Law of Municipal Corporations (2) II
California law governing the nature, regulation and control of the the counties, charter cities, sixth class cities, school districts and special districts. The creation, alteration, dissolution, legal actions by and against, powers and duties; rights and liabilities of local governments.

152. Techniques of Administrative Analysis (3) I, II
Areas and problems of administrative research; methods of analyzing structures and procedures in organizations; planning and administration of programs; design of forms; job classification and salary surveys; preparation of administrative reports.

153. Case Studies in Public Administration (3) I, II
Prerequisite: One course in public administration or consent of instructor.
Analysis, by case studies, of management problems in public agencies and the organization and methods techniques used to solve them. Practical limitations upon the use of these techniques.

155. Supervisory Staff and Employee Training (3) II
(Same course as Business Administration 147)
Prerequisite: Political Science 144.
Training as a management function and as an aspect of communication; operating methods and structure of training departments; types of training; evaluation of training results. Teaching methods and use of teaching aids. Not open to students with credit for Business Administration 147.

E-157. Public Relations of Public Agencies (2 or 3) II (Extension)
The place and function of public relations in government. Historical development of public opinion relating to governmental agencies and employees. Current public relations practices in governmental agencies.

159. Public Welfare Administration (3) II
(Same course as Sociology 185)
Prerequisites: Political Science 140A and 140B, or Sociology 190, or consent of instructor.
The philosophy of modern public welfare and the structure of public welfare agencies; administrative techniques, including personnel administration, federal-state-local relationships, finances. Not open to students with credit for Sociology 185.

160. Principles of Planning (2 or 3) I, II
An introduction to community planning: regional, county, and city. Consideration of the Master Plan, including its purposes, contents, and method of adoption.

161. Field Studies in Government (3) II, Summer
Prerequisite: Consent of instructor.
Study of organization, policies and functions of selected government agencies. Discussion by responsible officers and inspection of work operations and facilities in management, public safety, public works and utilities, and other major governmental operations.

162. Finance Administration (2 or 3) I
Principles and practices studied from the administrator's viewpoint. Problems of revenue, debt and treasury management, current and capital budget preparation and administration; purchasing and stores supervision; accounting and control and financial reporting.

E-163. Governmental Budgeting (2 or 3) I (Extension)
Procedures for budget preparation including expenditure and revenue estimating; budgetary studies; capital budgeting; problems in administrative and legislative consideration of the budget; consideration of performance budgeting techniques and practice.

Honors Course

166. Honors Course (Credit to be arranged) I, II
Refer to the Honors Program.

International Relations (Group V)

165. Dynamics of Modern International Crises (3) I
Prerequisite: Consent of instructor.
The determination and analysis of facts surrounding international crises since World War II; the evaluation of these crises and their effects upon external policies of the United States and the operations of the United Nations.

***168-S. Institute on World Affairs (3) Summer**
Contemporary problems in international relations. May be repeated once for course credit with permission of the instructor. A general education course in social science.

***170A-170B. International Relations (3-3) Year Course Beginning Semester I**
A historical and analytical consideration of the basic factors—historic, geographic, economic, ideologic, and strategic—which underly and condition the modern conflict between the "sovereign state" and the "community of nations." Fall semester: Origins and development through the nineteenth century. Spring semester: Twentieth century experimentation and conflict. A general education course in social science.

171. Administration of American Foreign Affairs (3) II
An examination of the legal, administrative, and political organizations by which American foreign policies are formulated and implemented.

172. International Organization (3) I
A critical analysis of the organization by which the international community seeks to provide for the exercise of legislative, administrative and judicial functions on the international level: diplomatic and consular corps; conferences; administration through commissions and unions; amicable procedures for settlement of disputes; the League of Nations-United Nations experiment.

173. Principles of International Law (3) I
The function of law in the international community. The historical development of the ideas and rules of international law and their place in the modern diplomatic and legal structure.

175. International Relations of the Latin American States (3) II
The foreign policies of the Latin American states; the organization of American states; relationships with the United Nations and with the United States.

176. International Relations of the Asian States (3) II
Foreign policies of the Asian states; relationships with the United Nations and the United States.

Comparative Government (Group VI)

180. Government of England (3) I
The structure and functioning of English parliamentary system with emphasis upon present day political principles and parties.

181. Government of the Soviet Union (3) I
Theory and practice of government in the Soviet Union, with some attention to Russian foreign affairs.

182. Government of Latin America (3) I
The governments of leading and representative Latin American states. Emphasis on the background and evolution of current political institutions and philosophies.

183. Government of Asia (3) I, II
Governments of leading and representative Asian states. Emphasis on current political institutions and philosophies.

185. Governments of Continental Europe (3) I, II
An analysis of the political systems of the countries of western continental Europe.

196-S. Institute of Public Affairs (1-3) Summer
Study of selected phases of American or Comparative Government. May be repeated to a maximum of six units of course credit with new content and consent of instructor.

197. Investigation and Report (3) I, II
Analysis of special topics. Admission by permission of instructor.

198. Internship in Public Administration (2-6) I, II
Prerequisite: Consent of instructor.
Students will be assigned to various government agencies and will work under joint supervision of agency heads and the course instructor. Participation in staff and internship conferences.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of instructor.

GRADUATE COURSES

200. The Scope and Method of Political Science (3) I, II
The discipline of political science and systematic training in its methodology. Required of all applicants for advanced degrees in political science.

210. Seminar in Political Theory (3) I, II
May be repeated with new content to a maximum of six units with consent of graduate adviser.

220. Seminar in Politics (3) I, II
May be repeated with new content to a maximum of six units with consent of graduate adviser.

230. Seminar in Public Law (3) I, II
May be repeated with new content to a maximum of six units with consent of graduate adviser.

240. Seminar in Public Administration (3) I, II
May be repeated with new content to a maximum of six units with consent of graduate adviser.

260. Planning and Public Policy (3) I, II
Prerequisite: Appropriate undergraduate courses in planning, political science, or related fields.

Relationship of the planning process to governmental policies and administration. Examination of social, political, and administrative problems involved in planning governmental programs and community facilities.

270. Seminar in International Relations (3) I, II
May be repeated with new content to a maximum of six units with consent of graduate adviser.

280. Seminar in Comparative Government (3) I, II
May be repeated with new content to a maximum of six units with consent of graduate adviser.

290. Bibliography (1)
Exercises in the use of basic reference books, journals, and specialized bibliographies, preparatory to the writing of a master's project or thesis.

291. Problem Analysis (3) I, II
Analytical treatment of selected problems in political science. Review of methods for investigation and reporting of data. Consideration of problems in preparation of projects or thesis.

296. Internship in Public Administration (1-6) I, II
Students will be assigned to various government agencies and will work under joint supervision of agency heads and the course instructor. Participation in staff and internship conferences. Admission by consent of the instructor. Required in addition to the 30 units for candidates for the master of science degree in public administration who lack practical experience.

298. Special Study (1-6) I, II
Individual study. Six units maximum credit.

Prerequisite: Consent of staff; to be arranged with the department chairman and instructor.

299. Thesis (3)
Prerequisites: An officially appointed thesis committee and advancement to candidacy.

Guidance in the preparation of a project or thesis for the master's degree.

PSYCHOLOGY

IN THE DIVISION OF LIFE SCIENCES

Professors: Carlson, H. B.; Geldreich (Chairman); Kaplan; Kidwell; McCollom; Treat; Turner; Voeks
Associate Professors: Harrison; Rumbaugh; Sidowski
Assistant Professors: Crow; Daniel, L. O.; Hunrichs; Kinnon; Leukel; O'Day; Psomas; Smith, J. R.; Stevens
Lecturer: Lockwood

A major in psychology is offered with the A.B. degree in *arts and sciences* and in *teacher education.* Courses in the major are in addition to 45 units in general education courses. A minor is not required of psychology majors for the bachelor's degree. Students who plan to take the general secondary credential with psychology as the major are advised to include two teaching minors for the credential in the undergraduate program.

Two plans are provided for the major in arts and sciences: one for those students expecting to pursue the study of psychology beyond the A.B. degree; the other for those students who wish to extend their general education in the field of psychology.

A minor in psychology is offered in *arts and sciences.*

MAJOR

Lower Division Requirements for All Psychology Majors. Psychology 5 and 6 (and Zoology 22 for Plan B majors). Recommended courses in related fields: six units in biology and/or zoology; three units in philosophy; and six units in anthropology and/or sociology.

Plan A Major

Plan A is for a nonprofessional major in psychology and is designed to provide the student with a greater understanding of his expanding group relations leading to happy and effective family and community living. The recommended pattern of courses for this program is not designed to facilitate graduate and professional study in psychology.

Upper Division Requirements for Plan A. Psychology 106, 131, 145, and electives to complete the major. It is expected that each student under Plan A will select, with the assistance of his adviser, a pattern of courses in line with his particular objectives in pursuing Plan A. For most students in Plan A, the following courses will be found particularly helpful: Psychology 105, 107, 122, 150, and 152.

To facilitate the purpose of Plan A the following courses in other departments are recommended as electives: Anthropology 1, 2; Biology 1; Zoology 22, 23; Economics 1A-1B and 102; Health Education 90; Philosophy 1A-1B; Biology 160 and Zoology 165; and courses in home economics.

Plan B Major

The purpose of Plan B is to facilitate the specific preparation of those students who wish to pursue graduate and professional preparation in clinical, industrial and personnel, and theoretical-experimental psychology. To this end, three separate programs are suggested under Plan B to provide an undergraduate basic preparation for further study in these fields.

Upper Division Requirements for All Plan B Majors. Psychology 104A, 105, 160 or 161, and 178, and 12 additional units to complete the major, selected from courses in one of the groups listed below. The Department of Psychology strongly recommends those courses listed in other departments to implement the program.

Preclinical. 12 units to be selected from Psychology 106, 141, 142, 145, 150, 151, 152, 160, and 175. Recommended courses: Anthropology 1, 2; Biology 3 and 4, or Biology 5; Philosophy 1A-1B, 20 and 129; Sociology 110 and 135; Speech Arts 174 or 176; and Zoology 165. A natural science minor is recommended.

Pre-industrial and Personnel. 12 units to be selected from Psychology 104B, 121, 122, 124, 141, 145, 152, 161, and 162. Recommended courses: Business Administration 144 and 146; Economics 1A-1B, 100A, 150, 151, 170, and 185; Philosophy 20; Political Science 144 and 145; Sociology 1 and 10; six units selected from Sociology 135, 110, 150, 180; and Speech Arts 4. A minor in business administration, economics, political science, or sociology is recommended.

Theoretical-experimental. 12 units to be selected from Psychology 104B, 141, 142, 145, 150, 160, 161, 162, 170, 175, and 177. Recommended courses: Chemistry 2A-2B; foreign language; Mathematics 21 and 22; Philosophy 1A, 20 and 137; Physics 2A-2B and 3A-3B; Biology 5; and Zoology 8, 9, 100 and 165. A mathematics or natural science minor is recommended.

PSYCHOLOGY MINOR

A minor in psychology is offered in arts and sciences. The minor consists of 15 to 22 units in psychology, nine units of which must be in courses carrying upper division credit.

PSYCHOLOGY MAJOR IN TEACHER EDUCATION

General Secondary Credential

Major for the General Secondary Credential. A nonteaching major in psychology is offered for the general secondary credential if completed with two teaching minors for the credential. Lower division: Psychology 5 and 6. Upper division: 24 upper division units to include Psychology 104A, 105, 131, 151, 160, and nine upper division units in psychology to be selected with approval of the departmental adviser.

Students taking the A.B. degree in psychology under Plan A or Plan B may also meet the requirements for the nonteaching major by including the following courses in the major: Psychology 104A, 105, 131, 151, and 160.

Additional Credential Requirements

Requirements for the general secondary credential include completion of a bachelor's degree, the nonteaching major in psychology, two teaching minors for the credential, and the credential requirements in a postgraduate year, to include Psychology 201 (3 units) and six upper division or graduate units in subject fields commonly taught in junior and senior high schools.

Refer to the section of the catalog on Professional Curricula in Teacher Education for a description of requirements in the postgraduate year.

THE MASTER'S DEGREE

The master of arts degree with a major in psychology, the master of arts degree for teaching service with a concentration in psychology, and the master of science degree in applied psychology are offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

Undergraduate Preparation

Before beginning work which can count toward meeting requirements for a master's degree in psychology, the student must

(1) Have completed 24 units of upper division work in psychology, including Psychology 104A, 105, 160 or 161, and 178, or the equivalents,

(2) Have an over-all grade point average of 3.0 in his last 60 units of work,

(3) Have a percentile rank of 50 or higher on the psychology department comprehensive examination "total."

Students who plan to specialize in industrial or personnel psychology must complete satisfactorily the following courses (or their equivalents), either as a part of the undergraduate or graduate work: Psychology 104B.

Students who plan to specialize in another phase of psychology must complete satisfactorily the following courses (or their equivalents), either as a part of the undergraduate or graduate work: Psychology 104B, 175, 177, and two of the following: 160, 161, 162, 170. Transfer students from other colleges are also required to take Psychology 201, preferably during their first semester here.

LOWER DIVISION COURSES

***1. General (3) I, II**

An introduction to some of the facts, principles, and concepts which are basic to understanding human behavior. A required general education course in psychology.

2. Psychology Laboratory (1)

One lecture and three hours of laboratory.

Prerequisite: Psychology 1.

Application of experimental methods to psychological problems. Includes design and execution of experiments.

5. Principles of Psychology: Basic Organization of Behavior (3) I, II

Prerequisites: Psychology 1 and sophomore standing.

The basic sensory, neural and motor mechanisms and their functions in human behavior.

6. Principles of Psychology: Learning and Integrated Behavior (3) I, II

Prerequisites: Psychology 1 and sophomore standing.

Attending, perceiving, and learning, including social learning, personality development, and conditions of efficient work.

***11. Applied Psychology (3) I, II**

Prerequisite: Psychology 1.

A survey of the application of the basic principles of psychology to business, education, industry, government, law, medicine and related fields. A general education course in psychology.

***12. Psychology of Individual Adjustment (3) I, II**

Prerequisite: Psychology 1.

An examination and interpretation of the factors which go into the making of the person as he adapts himself to the social world about him. The development of the normal personality. A general education course in psychology.

***14. Applied Group Dynamics (3) I, II**
Two lectures and four hours of laboratory.
Prerequisite: Psychology 1.
Psychological analysis of group processes and training in the human relations skills necessary for effective participation in groups. A general education course in psychology.

UPPER DIVISION COURSES

104A. Statistical Methods in Psychology (3) I, II
Prerequisite: Psychology 1.
An introduction to the use of quantitative methods in psychology, with emphasis upon measures of central tendency and variability, graphic methods and percentiles, linear correlation, and the applications of the normal probability curve. Not open to students with credit for another upper division course in statistical methods.

104B. Advanced Statistics (3) II
Prerequisites: Mathematics 3 and Psychology 104A, or consent of instructor.
A further study of quantitative methods in psychology with particular emphasis on methods of correlation, chi-square, and contingency, and in introduction to the analysis of variance.

105. Psychological Testing (3) I, II (Same course as Education 150)
Prerequisite: One of the following courses: Psychology 104A, Education 151, 152, 120, or a semester of statistical methods in any other department.
The basic principles of testing. The selection and critical evaluation of group tests of intelligence, personality, aptitude, interest and achievement. Not open for credit to students with credit for Education 150.

***106. Developmental Psychology (3) I, II**
Prerequisite: Psychology 1.
A study of the psychological development of the normal individual from conception through childhood, adolescence, maturity, and old age. Stress is laid upon the interdependence of the various periods of the individual's life. A general education course in psychology or in family life education.

***107. Psychology of Later Maturity (3) II**
Prerequisite: Psychology 1.
The psychological, physiological, and sociological factors influencing behavior in the later years of life. A general education course in psychology.

109. Mental Deficiency (3) I, Summer
Prerequisite: One of the following: Psychology 106, Education 110, 112, 113, or an equivalent.
The nature and causes of mental retardation, including the psychological effects of brain injury. Characteristics of the mentally defective.

121. Personnel and Industrial Psychology (3) I, II
Prerequisite: Psychology 104A, or Economics 140, or Sociology 160.
Psychological principles applied to problems of selection and assignment of industrial personnel, employee training, and fatigue.

122. Public Opinion Measurement (3) I (Same course as Journalism 122)
The history, methods, and problems of public opinion and attitude measurement. Emphasis will be placed upon the polling of consumers and voters. Students will be given field experience. Not open to students with credit for Journalism 122.

124. Engineering Psychology (3) II
Two lectures and three hours of laboratory.
Prerequisites: Psychology 1 and upper division standing.
Psychological problems of man-machine systems. Visual, auditory, and other sensory factors involved in the inter-relations between man and machines. Motion-study, work arrangement, fatigue, and environmental influences in relation to production.

130. Educational Psychology (2) I, II (Same course as Education III)
Prerequisite: Psychology 1.
To develop understanding of the applications of psychological research for effective classroom teaching. Observation and field work required. Not open to students with credit for Education 111.

131. Psychology of Personality (3) I, II
Prerequisite: One full year of psychology.
The principles of personality and their application to problems of adaptation and mental hygiene.

133. Principles of Interviewing (3)
Prerequisites: Two courses in psychology. Psychology 12 is recommended.
An introduction to the basic principles of interviewing and counseling. Designed for students majoring in fields other than psychology.

141. Neutral Bases of Behavior (3) I
Two lectures and two hours of activity periods.
Prerequisites: Psychology 5 and 6; or nine units in biological sciences.
Elements of neurology, with particular attention to the psycho-physiology of sensory mechanisms and motor systems.

142. Physiological Psychology (3) II
Two lectures and two hours of activity periods.
Prerequisites: Psychology 5 and 6 and three hours of biology; or nine hours of biology.
The neurophysiology of emotion, sleep, bodily needs, instinctive patterns of behavior, and of learning; brain and behavior disorders.

***145. Social Psychology (3) I, II**
The major problems and findings concerning group behavior and group membership, the socialization of the individual, and processes of social interaction. A general education course in psychology. Not open to students with credit for Sociology 140.

150. Abnormal Psychology (3) I, II
Prerequisite: One full year of psychology.
The psychology of behavior disorders, with emphasis on the amentias, neuroses, and psychoses.

151. Introduction to Clinical Appraisal (3) I, II
Prerequisites: Psychology 105 and 150, or Education 170 plus Education 151 or 152 or 120; and one additional course in psychology selected from the following: Psychology 105, 106, 131, 142, or 150.
A study of diagnostic devices in psychology, tests of clinical significance, ratings, and interviewing. Projective and case study analyses; problems of insight, rapport, empathy, and prediction of individual behavior.

152. Introduction to Methods of Counseling (3) I, II
Two lectures and two hours of activity periods.
Prerequisites: Senior standing in psychology or presocial work, and consent of instructor.
An introduction to problems and methods of counseling and adjustment. The utilization of psychological principles and techniques in dealing with various types of guidance situations. Not open to students with credit for Psychology 233 or Education 233.

153. Advanced Abnormal Psychology (3)
Prerequisite: Psychology 150.
An intensive study and evaluation of research methodology and current literature concerning the neuroses, psychoses, aphasias, ataxia, mental defect, and psychopharmacology.

160. Experimental Psychology: Learning and Cognition (3) I
One lecture and six hours of laboratory.
Prerequisites: Psychology 5, 6, and 104A.
Demonstrations of the principles and conditions of learning, perceiving, problem solving, and thinking. Methodology and design of experiments.

161. Experimental Psychology: Sensation and Perception (3) II
One lecture and six hours of laboratory.
Prerequisites: Psychology 5, 6, and 104A.
Demonstration of laws governing various sensory experience. Experiements in space perception and errors of judgment.

162. Experimental Psychology: Motor Processes and Fatigue (3) II
One lecture and six hours of laboratory.
Prerequisites: Psychology 5, 6, and 104A.
Demonstrations of the loss of control of motor integrations. Study of work of the integrated organism and fatigue. Emphasis upon motor processes.

166. Honors Course (Credit to be arranged) I, II
Refer to the Honors Program.

170. Principles of Animal Behavior (3) I, II
One lecture and six hours of laboratory.
Prerequisites: Psychology 5, 6, and one of the following: Psychology 160, 161, 175; or consent of instructor.
A study of the behavior of animals with a view to gaining a better understanding of the principles of behavioral patterns. Comparative information is included.

175. Theories of Learning (3) II
Prerequisites: Psychology 1, 5, 6, 104A; or consent of instructor.
A critical study of the facts, principles, and major theories of learning.

177. History of Psychology (3) II
Limited to psychology majors with senior standing and to graduate students.
A survey of the historical background of modern psychology.

178. Theories of Personality (3) I
Prerequisite: Major in psychology with senior or graduate standing.
Integration of the findings from perception, learning, motivation, and from physiological and social psychology through a systematic treatment of personality theories and of related experimental data.

180-S. Contemporary Problems in Psychology (1) Summer
Lectures open to the public.
Enrollment for credit limited to upper division and graduate majors in psychology; or consent of instructor.
A series of six weekly lectures by visiting psychologists on subjects related to current research problems. Reading and reports required of students enrolled for credit.

199. Special Study (1-6) I, II
Individual study, including library or laboratory research and a written report. Six units maximum credit.
Prerequisites: Senior standing and consent of instructor.

GRADUATE COURSES

201. Seminar (3) I
Prerequisites: 24 units in psychology, which may include educational psychology courses in the Education Department.
A review, integration, and supplementation of the student's knowledge of psychology.

204. Individual Psychological Testing (3)
One lecture and six hours of laboratory.
Prerequisites: Psychology 104A and 105.
Principles of individual testing. Instruction and practice in the administration and scoring of the Stanford-Binet, Wechsler-Bellevue, and some similar tests.

205. Advanced Mental Testing (3) II
Two hours of lecture and three hours of laboratory.
Prerequisites: Psychology 104A, 105, 151, and 204.
The theory of mental testing and a comprehensive survey of various verbal and nonverbal individual mental tests. Supervised administration, scoring and interpretation of some individual psychological tests. Tests other than the Wechsler-Bellevue and the Stanford-Binet are stressed.

211. Advanced Clinical Psychology (3) I
Two hours of lecture and three hours of laboratory.
Prerequisites: Psychology 151, 152, and 204.
Seminar integrating psychological testing, counseling, and clinical research. Includes supervised laboratory experience in counseling and in integrating data involved in clinical cases.

220. Seminar in Human Relations in Industry (3) II
Prerequisite: Psychology 121 or Business Administration 145.
Applications of psychological principles and methods of investigation to problems of industrial relations and motivation of employees; factors influencing morale and employee productivity; criteria of job proficiency; psychological aspects of worker-management relationships and leadership.

221. Seminar in Problems in Social Psychology (3) II
Prerequisites: Psychology 104A, 145, 160 or 161, and 175; or consent of instructor.
Factors influencing the formation of attitudes, opinions, and stereotypes; the establishment of roles during socialization of the indivdual; social crises, change, and resistance to change; the causes and alleviation of interpersonal conflict.

222. Seminar in Theoretical Psychology (3) I
Prerequisites: Psychology 175 and 178.
Basic concepts and principles integrating information in the areas of learning, emotion, motivation, personality, and social interaction. Relationships of scientific methods to the formation and testing of hypotheses and other conceptualizations. Limited to students who have a qualifying score on the Psychology Department Comprehensive Examination.

223. Experimental Design (3) I
Prerequisites: Psychology 104B and 160 or 161 or 162.
Principles and methods of planning and carrying out systematic investigations to answer questions concerning human behavior with stress on the interdependence of experimental design and statistical evaluation of results. Practice in formulation of testable hypotheses, techniques of equating groups, solution of sampling problems, and interpretation of results. Limited to students who have a qualifying score on the Psychology Department Comprehensive Examination.

224. Advanced Experimental (3) II
Prerequisite: Psychology 223.
Methods, techniques, and apparatus applicable to questions of various types. Special attention is given to sources of error, limitations on interpretation, and psychophysical methods. Students will design and carry out experiments in preparation for original independent investigations.

225. Principles of Test Construction (3) II
Prerequisites: Psychology 104B and 105.
Detailed consideration of adequate sampling techniques, item construction, item analysis, determination and enhancement of reliability and validity of tests.

233. Guidance Counseling Techniques (3) I, II (Same course as Education 233)
Prerequisite: Education 115 or 230, or Psychology 151.
Designed for school counselors. To stress the understandings and procedures necessary for effective interviewing. Not open to students with credit in Education 233.

234. Projective Psychology (3) I
Prerequisites: Psychology 104A, 105, 151, 178, and 204.
Introduction to the theory and principles underlying use of projective techniques by clinical psychologists; a review of the structure and dynamics of personality as interpreted by projective devices.

235. The Rorschach Method (3) II
Prerequisites: Psychology 104A, 105, 151, 178, 204, and 234.
A seminar and practicum in basic administration and scoring of the Rorschach Test, with critical appraisal of the problems involved in estimations of reliability and validity of this technique.

236. Interpretation of Projective Materials (3)

Prerequisite: Psychology 235.

A seminar in the clinical interpretation of the Rorschach Test, the Thematic Apperception Test, and other projective devices, with critical emphasis on methods of research and validation. Not acceptable for credit toward the M.S. degree in psychology.

290. Bibliography (1) I, II

Exercises in the use of basic reference books, journals, and specialized bibiliographies, preparatory to the writing of a master's project or thesis.

296. Directed Field Experience (1-6)

Prequisites: Limited to graduate students in psychology, with appropriate qualifications in a field of professional skill, and approved by the practicum committee of the Psychology Department.

Meets the requirement of directed field experience for candidates for the master of science degree, but is not limited to candidates for the degree. Required in addition to the 30-unit requirement for the degree.

298. Special Study (1-6) I, II

Prerequisite: Consent of instructor.

Individual projects involving library research or laboratory research in physiological, industrial, learning, clinical, and other areas of experimental psychology. May be repeated to a maximum of six units.

299. Thesis (3) I, II

Prerequisites: An officially appointed thesis committee and advancement to candidacy.

Guidance in the preparation of a project or thesis for the master's degree. Credit is contingent upon acceptance of the completed thesis by the Department of Psychology.

PUBLIC ADMINISTRATION

IN THE DIVISION OF SOCIAL SCIENCES

The program in public administration can be obtained by completion of the major in public administration or through a major in political science. In either case, the student will include in his program a sequence of work dealing with the principles and problems of organization for the carrying out of the functions of government, and public management. This latter aspect deals primarily with the directing and coordinating of work operations, the staffing of public agencies, the processes of budgeting and financial control, and the dynamics of management, namely planning, research, communications, leadership, and human relations in the administrative process.

The public administration curriculum may be adapted to several goals, one being entrance into the government service at the local, state or federal levels, and preparation for advancement up the government ladder. It is designed also to prepare students for graduate work in public administration.

Selected students may participate in an internship program in government offices. Working under the close supervision of governmental officials and an adviser in public administration, the intern deals with actual administrative procedures and problems in government.

Two certificate (nondegree) programs are offered to public service employees. These programs are described below.

PUBLIC ADMINISTRATION MAJOR

A major in public administration is granted with the A.B. degree in arts and sciences. The major is in addition to 45 units in general education courses.

Specific Requirements for the Major. Lower division: Political Science 71A-71B, Economics 1A-1B. Upper division: 36 upper-division units, including Political Science 140A-140B and 197 or 198, Economics 131, a three-unit upper division course in statistics, and additional courses selected with approval of the departmental adviser. Four additional units in upper division electives are required to complete the minimum of 40 upper division units required for graduation.

Students planning to enter the field of public administration should consult with an adviser in public administration.

PUBLIC ADMINISTRATION MINOR

A minor in public administration is offered in arts and sciences for students majoring in fields other than political science or public administration. This minor consists of Political Science 71A-71B, 140A-140B, and three units of upper division work selected from Political Science 197, 198, or other political science course in the upper division.

CERTIFICATE (NONDEGREE) PROGRAMS

Certificate in Public Administration. Admission to candidacy for the certificate in public administration is open to all public service employees who are also qualified for and gain admission to the college. Previous academic experience is not a prerequisite for beginning work on the certificate program. Candidacy will be established, however, by approval of the Coordinator of Public Administration. To receive the certificate in public administration, the candidate must complete an approved pattern of eight courses, with a grade point average of 2.5.

Certificate in Public Welfare Administration. Admission to candidacy for the certificate in public welfare administration will be established by approval of the Coordinator of Public Administration. To receive the certificate in public welfare administration, the candidate must complete an approved pattern of 30 units in courses at San Diego State with a grade point average of 3.0. Prerequisites for admission to candidacy are 20 units in approved social science courses and eligibility to enroll in the college.

Candidates for these certificate programs may obtain further information on requirements by writing to the Coordinator of Public Administration, San Diego State College.

THE MASTER'S DEGREE

The master of science degree is offered for persons interested in advanced study in the fields of general management, personnel administration, finance administration, engineering management, correctional administration, social administration, or the public service generally. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

RECREATION

IN THE DIVISION OF HEALTH EDUCATION, PHYSICAL EDUCATION, AND RECREATION

Professor: Scott (Chairman)
Associate Professor: Shannon
Assistant Professor: Murphy

A major in recreation is offered with the A.B. degree in arts and sciences. The recreation curriculum is designed to provide a program of training for recreation and camp leadership, work with youth groups, and related activities. Courses in the major are in addition to 45 units in general education courses, unless otherwise specified. A minor is not required of recreation majors for the bachelor's degree.

MAJOR

Lower division: Recreation 74 and 80; in addition, men must complete Recreation 63. Women must include Physical Education 2A, 5A-5B, and 6. Required in related fields: 12 units selected from the fields of art, industrial arts, music, physical education, and speech arts, with a maximum of five units in any one field. General education courses in related fields may be counted in general education requirements.

Upper division: 36 upper division units distributed as follows: Recreation 165, 170A-170B, 184A-184B; Psychology 106, 145; Education 140; Physical Education 161; Political Science 143; Sociology 148; and six units selected from Sociology 114, 125, 157, 180, 183, and 184. Four additional upper division units in electives are required to complete the 40 upper division units for graduation. Students should consult with the adviser in the recreation curriculum for selection and arrangement of courses.

MINOR

A minor in recreation is offered in arts and sciences. The minor consists of 15 to 22 units to include the following courses: Lower division: two units of physical education activity courses; Recreation 74; and two units chosen from fields of art, dance, drama, or music. Upper division: Recreation 165, 170A-170B, and 184A or 184B. Recommended: Physical Education 161. Consultation with the departmental chairman is advised.

LOWER DIVISION COURSES

63. Professional Activities: Techniques of the Dance (2) II
(Same course as Physical Education 63)
Practice in the skills and techniques of the dance, and experience in the organization and presentation of dance materials. Not open to students with credit for Physical Education 63.

74. Elementary School Physical Education Activities (2) I, II
(Same course as Physical Education 74.)
Physical education activities designed for the elementary school child; emphasis on the organization, supervision, and evaluation of the physical education program in the elementary school. Not open to students with credit for Physical Education 74.

80. Camp Leadership (2) II
Consideration of camp administration and principles of good camp leadership. Lectures and practical sessions aimed at general training in all phases of outdoor education and camp leadership, including skills in axemanship, outdoor cooking, nature projects, camp crafts, campfire and special camp programs.

UPPER DIVISION COURSES

165. Administration of Community Recreation (3) II
The principles of organization and promotion of leisure time and recreation activities. Course content covers growth of the recreation movement, administration of areas and facilities, program of activities, features, services, organization and administration problems. A required course for recreation minors.

166. Honors Course I, II (Credit to be arranged)
Refer to the Honors Program.

170A-170B. Recreation Leadership (3-3) Year Course Beginning Semester I
(Same course as Physical Education 170A-170B.)
Principles and practices in recreation leadership. Course content of 170A includes organization of competition, intramurals, playground practices; content of 170B includes recreational arts and crafts, dramatics, social recreation, and music. Neither course is a prerequisite for the other. Not open to students with credit for Physical Education 170A-170B.

184A-184B. Field Work in Recreation (3-3) Year Course Beginning Semester I
Prerequisite: For recreation majors and minors. Others only with consent of instructor.
Observation and participation in supervised group activities in the field. Practical experience in the various public and semipublic community recreation agencies.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of special study adviser.

GRADUATE COURSES

204. Problems in Recreation (3) (Alternate years)
(Same course as Physical Education 204.)
A survey of current problems facing the recreation profession, a review of literature, discussion of trends and observation of school situations together with the analysis and evaluation of actual problems. Written reports are required. Not open to students with credit for Physical Education 204.

ROMANCE LANGUAGES

IN THE DIVISION OF HUMANITIES

Faculty assigned to teach the graduate course in Romance languages are drawn from the Department of Foreign Languages.

A major in Romance languages is offered with the A.B. degree in *arts and sciences* and in *teacher education.* Courses for the major in arts and sciences and for the teaching major for the general secondary credential in teacher education are in addition to 45 units in general education, except that six units in French or Spanish from courses numbered 1, 2, 3, and 4 may be counted in general education. A minor to be approved by the departmental adviser is required of students with this major for the bachelor's degree.

A teaching major in foreign languages (French and Spanish) is offered with the A.B. degree and junior high school credential. Courses for this major are in addition to 45 units in general education. A student with this major is required to complete a minor in industrial arts or in home economics.

MAJOR IN ARTS AND SCIENCES

Lower Division. French 1, 2, 3, 4 (or equivalents), 5, 6; and Spanish 1, 2, 3, 4 (or equivalents), 5, 6. Recommended: History 4A-4B, or for students emphasizing Spanish in the upper division, History 8A-8B.

Upper Division. 24 upper division units in French and Spanish, including French or Spanish 198. At least nine units of upper division courses must be taken in each language.

MAJORS IN TEACHER EDUCATION

General Secondary Credential

Major for the General Secondary Credential. A teaching major in Romance languages is offered for the general secondary credential. This major may be used for the A.B. degree if the student also completes a minor in a field other than French or Spanish and has the approval of his departmental adviser.

Lower Division. Requirements are the same as those in the arts and sciences major.

Upper Division. 33 upper division units to include French 101A-101B; Spanish 101A-101B; nine units from courses in French literature selected with approval of the adviser; nine units from courses in Spanish literature or Spanish-American literature selected with approval of the adviser; French or Spanish 198 (in the teaching major field of concentration); and upper division electives in French or Spanish to complete the major.

Additional Credential Requirements

A student planning to take the general secondary credential who completes this teaching major in Romance languages, plus the requirements in the postgraduate year, will meet the credential requirements for a teaching major and a teaching minor in French and Spanish (or Spanish and French), provided that the student have credit for a minimum of 36 units in the teaching major field of concentration and 20 units in the other language field, which will be the teaching minor, exclusive of course equivalents.

Before taking a directed teaching assignment (Education 180 or 316A), the candidate for the credential must pass a proficiency examination, administered by the Department of Foreign Languages, in both languages and in their area civilizations. (French 40-41 or 140-141, and Spanish 40-41 or 140-141, prepare for the latter examinations in the area civilizations).

In the postgraduate year, the student will complete requirements for the credential, including two graduate courses in the teaching major field of concentration (French or Spanish) to be selected from the following courses: French 214 and 220; or Spanish 201 and 204. (Total of 4 units.)

Refer to the section of the catalog on Profesional Curricula in Teacher Education for a description of requirements in the postgraduate year.

Junior High School Credential

Major for the Junior High School Credential. A teaching major in foreign languages (French and Spanish) is offered with the A.B. degree and junior high school credential to students with teaching minors in home economics or industrial arts.

Students taking this credential must complete the teaching major and minor and additional requirements in professional education courses. Before taking a directed teaching assignment (Education 180), the candidate for the credential must pass a proficiency examination, administered by the Department of Foreign Languages, in both languages and in their area civilizations. (French 40-41 or 140-141, and Spanish 40-41 or 140-141, prepare for the latter examinations in the area civilization).

It is recommended that this credential be taken in combination with the general elementary or special secondary credential. For a description of this program, refer to Combination of Credentials in the section of the catalog on Professional Curricula in Teacher Education. Students wishing to secure the junior high school credential under conditions other than those described above should consult with the Coordinator of Secondary Education.

Requirements in the Major. 24 units in one or more foreign languages (French, German, or Spanish), to include 18 units in courses carrying upper division credit.

Professional Courses in Teacher Education. 24 upper division units to include Education 100, 110, 120, 180, 121 (methods in the major and minor fields), and Health Education 151.

For additional information on this credential, refer to the junior high school credential in the section of the catalog on Professional Curricula in Teacher Education.

THE MASTER OF ARTS DEGREE

The master of arts degree for teaching service in foreign language with a concentration in Romance languages is offered. For further information, refer to the section of this catalog on the Graduate Division.

GRADUATE COURSES

290. Romance Language Bibliography (1) I

Prerequisite: Nine units of upper division French or Spanish.

Exercises in the use of basic reference books, journals, and specialized bibliographies in the field of the Romance languages.

RUSSIAN

IN THE DIVISION OF HUMANITIES

Assistant Professor: Lawson, R. H.

Major or minor work is not offered in Russian.

LOWER DIVISION COURSES

1. Elementary (3) I

Three lectures and one hour of laboratory.

Prerequisite: Two years of high school or one year of college foreign language.

Pronunciation, oral practice, reading in Russian literature, minimum essentials of grammar.

2. Elementary (3) II

Three lectures and one hour of laboratory.

Prerequisite: Russian 1.

Continuation of Russian 1.

3. Intermediate (3) I

Prerequisite: Russian 2.

Reading in Russian of short stories, novels, or plays; oral practice.

4. Intermediate (3) II

Prerequisite: Russian 3.

Continuation of Russian 3. Outside reading and reports.

SOCIAL SCIENCE

IN THE DIVISION OF SOCIAL SCIENCES

A major in social science and a major in Latin-American Studies are offered with the A.B. degree in *arts and sciences.* Teaching majors in social science, leading to the junior high school and general secondary credentials, are offered in *teacher education.* Courses in these majors are in addition to 45 units in general education courses, except that 12 units in the social sciences may be counted as general education.

Students with these majors are not required to complete a minor for the bachelor's degree. Students who plan to take the general secondary credential are advised to include an appropriate teaching minor for the credential in the undergraduate program.

Teaching minors in social science are offered in *teacher education* for the general elementary, kindergarten-primary, and general secondary credentials.

SOCIAL SCIENCE MAJOR IN ARTS AND SCIENCES

Lower Division. Six units in *each of three* of the following fields: (1) anthropology, (2) economics, (3) geography, (4) history, (5) political science, and (6) sociology.

Upper Division. 30 upper division units to include 12 units from any field named above; six units from *each of two* additional fields named above; and six units of electives from any of the fields named above. The major must include six units in U. S. history in either lower or upper division and three units in a fourth field, selected from the social science fields named above.

LATIN-AMERICAN STUDIES MAJOR IN ARTS AND SCIENCES

For a complete description of the major in Latin-American Studies, refer to the section of this catalog on Latin-American Studies.

Requirements for the Major

Foreign Language and Area Studies. A reading and speaking knowledge of Spanish or Portuguese is required of students with the major in Latin-American Studies. Students are also urged to include the following courses within general education requirements: Art 51, Comparative Literature 104A-104B, and Spanish 141 or Humanities 147.

Lower Division. Six units in *each of three* of the following fields: Anthropology 1 and 2; Economics 1A-1B; Geography 1 and 2; History 8A-8B; and Political Science 1A-1B (18 units).

Upper Division. 30 upper division units from the fields named above, to include 12 units from *one* field, six units from *each of two* additional fields, and six units from *any of the fields.* Courses strongly recommended: Economics 190 and 195; Geography 123 and 124; History 161 and 162; and Political Science 175 and 182. Recommended selection of courses to complete the major include Anthropology 151B, Geography 121, History 173A-173B, and Political Science 170A-170B and 171. Any variation in the student's program must be with the approval of the adviser.

SOCIAL SCIENCE MAJORS IN TEACHER EDUCATION

General Secondary Credential

Major for the General Secondary Credential. A teaching major in social science is offered for the general secondary credential. This teaching major, which may be used for the A.B. degree, is the same as the major in arts and sciences. Requirements for the general secondary credential include completion of a bachelor's degree, the teaching major in social science, a teaching minor for the credential selected from an area other than the social sciences, and the credential requirements in a postgraduate year, to include four to six units of upper division or graduate courses to be selected from the social sciences with approval of the department adviser.

Refer to the section of the catalog on Professional Curricula in Teacher Education for a description of requirements in the postgraduate year.

Junior High School Credential

Major for the Junior High School Credential. A teaching major in social science is offered with the A.B. degree and junior high school credential to students with teaching minors in home economics or industrial arts. Students taking this credential must complete the teaching major and minor and additional requirements in professional education courses.

It is recommended that this credential be taken in combination with the general elementary or special secondary credential. For a description of this program, refer to Combination of Credentials in the section of the catalog on Professional Curricula in Teacher Education. Students wishing to secure the junior high school credential under conditions other than those described above should consult with the Coordinator of Secondary Education.

Requirements in the Major. 24 units selected from courses in anthropology, economics, geography (except Geography 1 and 3), history, political science, and sociology, 18 units of which must be in courses carrying upper division credit. Twelve units in social science courses must be concentrated in one field, six units of which must be in courses carrying upper division credit.

Professional Courses in Teacher Education. 24 upper division units to include Education 100, 110, 120, 180, 121 (methods in the major and minor fields), and Health Education 151.

For additional information on this credential, refer to the Junior High School Credential in the section of the catalog on Professional Curricula in Teacher Education.

SOCIAL SCIENCE MINORS IN TEACHER EDUCATION

General Secondary Credential

Minor for the General Secondary Credential. A teaching minor in social science is offered for the general secondary credential. This minor may be used for the A.B. degree by students who have been admitted to teacher education and have completed at least eight units of professional education courses by date of degree candidacy. This minor is not available to students with a social science major.

The minor consists of 27 units to include the following: Lower division: a six-unit sequence from *each of three* of the following fields: Anthropology 1 and 2, Economics 1A-1B, Geography 1 and 2 or 12A-12B, History 4A-4B or 8A-8B, Political Science 1A-1B or 71A-71B, and Sociology 1 and 10. Upper division: six units in an upper division sequence course in U. S. history and three upper division units of social science electives.

General Elementary and Kindergarten-Primary Credentials

Minor for the General Elementary and Kindergarten-Primary Credentials. A teaching minor in social science is offered for the general elementary or kindergarten-primary credential. This minor consists of a minimum of 15 units selected from anthropology, economics, geography (except Geography 1 and 3), history, political science, and sociology, to include at least six upper division units in history and/or geography.

THE MASTER'S DEGREE

The master of arts degree for teaching service in social science with concentrations in economics, geography, political science, or sociology is offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

SOCIAL WELFARE

(PRESOCIAL WORK)

IN THE DIVISION OF SOCIAL SCIENCES

The professional curriculum in social welfare prepares for admission to graduate work in recognized American schools of social work. This curriculum should be pursued by those who plan careers in federal, state and local welfare work; social work in public schools including preparation for a teaching credential; family and children's private casework agencies; social settlement work; county probation work; child welfare agencies; statistical and investigation work in private and public agencies; work in public institutions for the defective and delinquent; medical social service and psychiatric social work in hospitals and clinics; executive positions in social work; and social work in numerous other organizations.

The lower division requirements of the arts and sciences curricula include the general requirements of recognized professional schools of social work and should therefore ordinarily be met in full.

A major in social welfare is offered by the Sociology Department to students preparing to enter the field of social work. A certificate (non-degree) program in public welfare administration is offered by the Political Science Department to prepare persons professionally engaged in the field of social work.

SOCIAL WELFARE MAJOR

A major in social welfare is offered with the A.B. degree in *arts and sciences*. The major is in addition to 45 units in general education courses, except as otherwise specified. Students majoring in social welfare are not required to complete a minor for the bachelor's degree.

Lower Division. Sociology 1 and 10; Economics 1A-1B; Political Science 71A-71B or 1A-1B; and Psychology 11. Recommended: Biology 3 or 4, and courses from anthropology, foreign languages, and speech arts. Twelve units in the social science courses may be counted in general education.

Upper Division. Sociology 140, 160, 180, 189, and either 182, 183, or 184 plus an upper division elective course in sociology (18 units); Psychology 150 and six units chosen from Psychology 106, 107, 131, 151, or 152 (9 units); six units selected from Economics 102, 131, 150, 151, 170, 185, and 195; six units selected from Political Science 140A, 140B, 142, or 143; and Zoology 165 (2 units). Students should consult with the adviser in the social welfare curriculum for selection and arrangement of courses.

CERTIFICATE IN PUBLIC WELFARE ADMINISTRATION

A certificate in public welfare administration is available to persons professionally engaged in the field of social work. This program is described under the Public Administration Curriculum.

SOCIOLOGY

IN THE DIVISION OF SOCIAL SCIENCES

Professors: Barnhart; Klapp; Milne
Associate Professors: Kirby (Chairman); Wendling
Assistant Professors: Daniels, M. J.; DeLora; Kurtz; MacCannell; Tebor; Young

A major in sociology is offered with the A.B. degree in *arts and sciences*. Courses in the major are in addition to 45 units in general education courses. Sociology majors are required to complete a minor for the bachelor's degree.

A minor in sociology is offered in *arts and sciences*.

MAJOR

Lower Division. Sociology 1 and 10.

Upper Division. 24 upper division units in sociology to include Sociology 100, 101, 110, 140, and 160.

MINOR

A minor in sociology is offered in *arts and sciences*. The minor consists of 15 to 22 units in sociology, nine units of which must be in courses carrying upper division credit.

THE MASTER'S DEGREE

The master of arts degree with a major in sociology and the master of arts degree for teaching service in social science with a concentration in sociology are offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

LOWER DIVISION COURSES

***1. Principles of Sociology (3) I, II**
This course is a prerequisite for all upper division courses in sociology.

The development and use of the concepts applied to sociological analysis; the effects of isolation and social contacts, interaction, processes, forces, controls, collective behavior and social progress. A general education course in the social sciences. (Formerly Sociology 51.)

***10. Contemporary Social Problems (3) I, II**
May be taken before Sociology 1.

Survey of modern social problems recognizing the sociological factors involved. Emphasis on the scientific method of approach. An evaluation of various causes and solutions of problems. A general education course in the social sciences. (Formerly Sociology 50.)

***35. Courtship and Marriage (3) I, II**
Emphasizes preparation for successful marital adjustment by presenting materials that will help students to solve their own courtship, marriage, and family problems. A general education course in social science and also in family life education. Not open to students with credit for Sociology 135 or Home Economics 135 or other course in marriage and the family.

UPPER DIVISION COURSES

100. History of Social Thought (3) I
Prerequisite: Sociology 1.

The origin and development of social theory in Europe and America; consideration of the fields and specialization and research in contemporary American sociology. (Formerly Sociology 152.)

101. Modern Social Theory (3) II
Prerequisites: Sociology 1 and 100, or consent of instructor.

A study of theories basic to modern sociological research, including the viewpoints of European and American thinkers. (Formerly Sociology 153.)

110. Social Disorganization (3) I
Prerequisite: Sociology 1.

Survey of many alleged abnormal phenomena in society as seen in society today in various forms of individual, family, community and world disorganization, such as crime, prostitution, extreme alcoholism, migratory workers, divorce, revolution, war, etc. (Formerly Sociology 170.)

113. Criminology and Penology (3) I
Prerequisite: Sociology 1 or consent of instructor.

The extent and characteristics of crime; consideration of physical, mental, economic, and sociological causes of crime; study of methods of penal discipline, prison labor, parole, and probation; programs of prevention. (Formerly Sociology 173.)

114. Juvenile Delinquency (3) I
Prerequisite: Sociology 1 or consent of instructor.

The nature and extent of delinquency; the causative factors involved; methods of control and prevention, with special attention to the protective and remedial measures offered by the school, home, juvenile court, correctional institutions and camps, probation and parole, and recreational agencies. (Formerly Sociology 174.)

116. Contemporary Correctional Administration (3) II
Prerequisite: Sociology 113 or 114, or consent of instructor.

A study of the problems encountered in administering modern correctional institutions, forestry and road camps, detention homes, and jails. (Formerly Sociology 176.)

120. Industrial Sociology (3) II
Prerequisite: Sociology 1.

Analysis of group relationships within economic organizations. Problems of leadership, morale and conflict. Some attention to the sociology of occupations and professions.

121. Medical Sociology (3) I
Prerequisite: Sociology 1.
A sociological analysis of health and medical institutions. Cultural factors in conceptions of disease, health, and healing. Social structure of medical facilities and the role of personnel in such institutions. Relation of illness to income, housing, and other socio-economic factors. Not open to students with credit for Health Education 181.

***125. Race Relations (3) I**
Prerequisite: Sociology 1.
A study of Negro, Oriental, and other minority groups in the United States. A study of mental capacities, education, cultural achievement, family life, delinquency and other social factors of each group. Race prejudice, racial consciousness, theories of racial superiority and inferiority will be considered. A general education course in the social sciences. (Formerly Sociology 110.)

135. Marriage and the Family (3) I, II
(Same course as Home Economics 135)
Background factors predictive of happy and successful marriages; principal areas of adjustment in marriage; parent-child problems; the changing adolescent; causes and results of divorce; the family of tomorrow. A general education course in social science or in family life education. Not open to students with credit for Sociology 35 or Home Economics 135 or other course in marriage and the family.

136. Sociology of the Family (3) II
Prerequisite: Sociology 1. Recommended: Sociology 101 and 146.
A comparative study of family systems in different societies. Changing role-structure and functions of the modern family; rural-urban, social class, racial and ethnic differences in family organization; marriage and family as a developing system of interpersonal relationships.

138. Sociology of Religion (3) II
Prerequisite: Sociology 1. Recommended: Sociology 101 and 146.
The role of religion in society as cult and institution, including primitive religion, modern sects and churches, ritual, secularization, and religious movements.

***140. Social-Psychological Foundations of Society (3) I, II**
Prerequisites: Sociology 1 and Psychology 1.
The major problems and findings of social-psychological studies with reference to group behavior and group membership, the socialization of the individual, and processes of social interaction. A general education course in the social sciences. Not open to students with credit for Psychology 145.

146. Collective Behavior (3) II
Prerequisites: Sociology 1 and 140, or consent of instructor.
The basic processes of social behavior in masses and groups, including crowd behavior, fads, fashions, crazes, panics, rumors; sects and cults; heroes and scapegoats; social movements; effects of mass communication .

148. Small Groups (3) I
Prerequisites: Sociology 1 and 140, or consent of instructor.
Processes, morale and organization of small groups; their role in society and institutions such as industry, military, recreation and education; recent studies and methods of research.

150. Population Problems (3) I
Prerequisite: Sociology 1 or consent of instructor.
Problems of population relative to age, sex, and racial distribution. Population practices and theories. Biological and geographical aspects of population problems. International population movements. (Formerly Sociology 180.)

157. Urban Sociology (3) II
Prerequisite: Sociology 1 or consent of instructor.
A study of the structure and function of the modern city; types of neighborhoods; forms of recreation; social forces in a metropolitan area; types of urban personalities and groups; rural-urban conflicts of culture. Practical field studies required. (Formerly Sociology 187.)

160. Elementary Social Statistics (3) I, II
Prerequisites: Sociology 1 and Math A (or pass mathematics competency test). Recommended: Math 3 or 21.
Analysis and presentation of elementary materials in the fields of sociology and social work. Tabular and graphic presentation, analysis of frequency distribution, trends, simple correlation, sampling and reliability techniques. This course recommended for most upper division sociology courses. Not open to students with credit for Economics 140 or Psychology 104A or 104B. (Formerly Sociolgy 103.)

164. Methods of Social Research (3) II
Prerequisites: Sociology 1 and 160, or consent of instructor.
Research methods and interpretation used in the study of communities, institutions, and social conditions. (Formerly Sociology 184.)

166. Honors Course (Credit to be arranged) I, II
Refer to the Honors Program.

180. Fields of Social Work (3) I
Prerequisite: Sociology 1.
A survey of the nature of social work and the various settings in which social work is practiced in American society. The student is familiarized with the various social agencies and their operations by use of readings, lectures and speakers from various social agencies. (Formerly Sociology 190.)

182. Methods of Social Casework (3) II
Prerequisite: Sociology 180 or consent of instructor.
Introduction to the techniques and skills used in casework agencies, with emphasis on discussion of case materials. Designed to be taken prior to or concurrent with Sociology 189. Field Assignment. (Formerly Sociology 195.)

183. Social Group Work (3) II
Prerequisite: Sociology 180 or consent of instructor.
The role of the social worker with the group and its individuals; understanding group processes; use of program media for the development of interpersonal relations and group structure. Discussion includes process recording. (Formerly Sociology 193.)

184. Community Welfare Organization (3) II
Prerequisite: Sociology 180 or consent of instructor.
The social structure of communities and processes of change as related to the community welfare programs; strategy of change; the role of the professional worker; public-private relationships. (Formerly Sociology 191.)

185. Public Welfare Administration (3) I
(Same course as Political Science 159)
Prerequisites: Sociology 180 or Political Science 140A-140B; or Political Science 147A or 147B; or consent of instructor.
The philosophy of modern public welfare and the structure of public welfare agencies; administrative techniques, including personnel administration, federal-local relationships, finances. Not open to students with credit for Political Science 159. (Formerly Sociology 194.)

186. Social Work and the Law (3) II
Prerequisite: Sociology 180 or consent of instructor.
Trends and current developments in social legislation; laws regarding poor relief, child labor, and the family, including marriage and divorce laws, illegitimacy, adoption, guardianship. (Formerly Sociology 192.)

189. Field Assignment in Social Work (3) II
Prerequisites: Sociology 180 and 182 or 183 or 184; or concurrent registration in one of these courses.
Approximately 10 hours weekly spent in an approved local social agency in the field of social casework, group work, or community organization, under the supervision of an experienced agency worker and including periodic consultations with the faculty adviser. (Formerly Sociology 196.)

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of instructor.

GRADUATE COURSES

200. Seminar in Social Theory (3)
Prerequisites: Sociology 101 and 164, or consent of instructor.
Advanced study of social theory, its modern formulations and historical development, with emphasis on individual research and report of findings.

210. Seminar in Social Disorganization (3)
Prerequisites: Sociology 110 and 164, or consent of instructor.
Advanced study of the processes which contribute to and maintain social and personal disorganization. The relationship of sociological factors, including urbanization, secularization and social change, to these processes, with emphasis on contemporary theory and research.

220. Seminar in Social Organization (3)
Prerequisite: Sociology 164 or consent of instructor.
Analysis of the principal organizational forms of society and groups, in terms of their basic patterns, interrelations, organizational change, and the relation of the individual to social structure. Study of bureaucracy, consensus, formal and informal structure and function.

230. Seminar in Social Institutions (3)
Prerequisite: Sociology 164 or consent of instructor.
Advanced study of institutional forms and processes, including the institutional bases of social mores. The effect of sociological factors, including cultural lag, on contemporary social institutions.

240. Seminar in Social Interaction (3)
Prerequisites: Sociology 140 and 164, or consent of instructor.
Advanced study of social-psychological interaction, including sociological factors in personality development and analysis of morale, motivation, leadership and other elements of group behavior.

250. Seminar in Human Ecology and Demography (3)
Prerequisites: Sociology 150 and 164, or consent of instructor.
Analysis of the sociological variables which influence distribution and composition of populations and social institutions, with special emphasis on urban social organization.

260. Seminar in Research Methods (3)
Prerequisites: Sociology 101 and 164, or consent of instructor.
Analysis of methods used in current sociological research, including evaluation of reported findings. Discussion of research designs appropriate to particular types of projects. Evaluation of research in progress by members of the seminar.

280. Principles of Social Casework (3)
Prerequisites: Sociology 180, or Psychology 152, or Education 233, or Psychology 233.
A study of the principles and practices of social casework; problems of case recording and analysis. Directed fieldwork and case studies. (Formerly Sociology 230.)

281. Fieldwork in Social Casework (3)
Prerequisites: Sociology 180 and 280.
Supervised practice in local social work agencies. (Formerly Sociology 231.)

285A-285B. Casework Supervision (3-3) I, II
Prerequisite: Sociology 280 or consent of instructor.
Discussion and analysis of cases and problem situations encountered by social casework supervisors. Review of basic casework techniques and principles of personnel supervision as applied to social casework. (Formerly Sociology 235A-235B.)

290. Bibliography (1)
Exercises in the use of basic reference books, journals, and specialized bibliographies, preparatory to the writing of a master's project or thesis.

298. Special Study (1-6) I, II
Individual study. Six units maximum credit.

Prerequisite: Consent of staff; to be arranged with department chairman and instructor.

299. Thesis (3)
Prerequisites: An officially appointed thesis committee and advancement to candidacy.

Guidance in the preparation of a project or thesis for the master's degree.

SPANISH

IN THE DIVISION OF HUMANITIES

Professor: Phillips, W. T.
Assistant Professor: Baker, C. H.

Majors and minors in Spanish are offered in *arts and sciences* and in *teacher education.* Courses for the major in arts and sciences and for the teaching major for the general secondary credential in teacher education are in addition to 45 units in general education, except that six units in elementary French or German may be counted in general education. A minor to be approved by the departmental adviser is required of students using these majors for the bachelor's degree. Students who plan to take the general secondary credential are advised to complete a teaching minor for the credential in the undergraduate program.

A teaching major in foreign languages (Spanish) is also offered with the A.B. degree and junior high school credential. Courses for this major are in addition to 45 units in general education. A student with this major is required to complete a minor in industrial arts or in home economics.

MAJOR IN ARTS AND SCIENCES

Lower Division. Spanish 1, 2, 3, 4 (or equivalents), 5, 6; and French 1 and 2, or German 1 and 2, or Latin 1 and 2 (or equivalents). Recommended: History 4A-4B or 8A-8B.

Each year course in high school foreign language may be counted as the equivalent of three semester units of pattern credit in college. Year courses in foreign languages completed in high school may not be repeated in college for credit, except that the last year course in the foreign language sequence may be repeated in college for graduation credit, not to exceed a total of three units of repeated work.

Upper Division. 24 upper division units, at least 21 units of which must be in Spanish, including Spanish 198. With the approval of the departmental adviser the remaining three units may be selected from the following courses: Spanish 115, 116; Anthropology 151B; Geography 123, 124, 125; History 161, 162; Political Science 182; or Comparative Literature 101A, 140A-140B, 152A-152B.

MINOR IN ARTS AND SCIENCES

A minor in Spanish is offered in *arts and sciences.* The minor consists of 15 to 22 units in Spanish (exclusive of course equivalents), six units of which must be in courses carrying upper division credit.

MAJORS IN TEACHER EDUCATION

General Secondary Credential

Major for the General Secondary Credential. A teaching major in Spanish is offered for the general secondary credential. This major, which may be used for the A.B. degree, is the same as the major in arts and sciences, except that Spanish 101A-101B must be included in the major. By date of credential candidacy, the student must have completed at least 36 units in Spanish, exclusive of course equivalents. Before taking a directed teaching assignment in the language (Education 180 or 316A), the candidate for the credential must pass a proficiency examination, administered by the Department of Foreign Languages, in the language and its area civilization. (Spanish 40-41, or 140-141, prepare for this latter examination in the area civilization).

Additional Credential Requirements

Requirements for the general secondary credential include completion of a bachelor's degree, the teaching major in Spanish, a teaching minor for the credential, and the credential requirements in a postgraduate year, to include Spanish 201 and 204 (4 units).

Refer to the section of the catalog on Curricula in Teacher Education for a description of requirements in the postgraduate year.

Junior High School Credential

Major for the Junior High School Credential. A teaching major in foreign languages (Spanish) is offered with the A.B. degree and junior high school credential to students with teaching minors in home economics or industrial arts. Students taking this credential must complete the teaching major and minor and additional requirements in professional education courses. Before taking a directed teaching assignment in the language (Education 180), the candidate for the credential must pass a proficiency examination, administered by the Department of Foreign Languages, in the language and its area civilization. (Spanish 40-41, or 140-141 prepare for this latter examination in the area civilization).

It is recommended that this credential be taken in combination with the general elementary or special secondary credential. For a description of this program, refer to Combination of Credentials in the section of the catalog on Professional Curricula in Teacher Education. Students wishing to secure the junior high school credential under conditions other than those described above should consult with the Coordinator of Secondary Education.

Requirements in the major: 24 units in one or more foreign languages (French, German, or Spanish), to include 18 units in courses carrying upper division credit.

Professional courses in teacher education: 24 upper division units to include Education 100, 110, 120, 180, 121 (methods in the major and minor fields), and Health Education 151.

For additional information on this credential, refer to the Junior High School Credential in the section of the catalog on Curricula in Teacher Education.

MINORS IN TEACHER EDUCATION

General Secondary Credential

Minor for the General Secondary Credential. A teaching minor in Spanish is offered for the general secondary credential. This minor, which may be used for the A.B. degree, consists of a minimum of 21 units (exclusive of course equivalents) to include the following courses: Spanish 1, 2, 3, 4, 5, 6; and Spanish 101A-101B. Before taking a directed teaching assignment in the language (Education 180 or 316A), the candidate for the credential must pass a proficiency examination, administered by the Department of Foreign Languages, in the language and its area civilization. (Spanish 40-41, or 140-141, prepare for this latter examination in the area civilization).

General Elementary and Kindergarten-Primary Credentials

Minor for the General Elementary and Kindergarten-Primary Credentials. A teaching minor in foreign languages is offered for the general elementary or kindergarten-primary credential. This minor consists of a minimum of 15 units in one or more foreign languages (Spanish, French, German), six units of which must be in courses carrying upper division credit.

THE MASTER'S DEGREE

The master of arts degree for teaching service in foreign language with a concentration in Spanish is offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

LOWER DIVISION COURSES

***1. Elementary (3) I, II**

Three lectures and one hour of laboratory.

Pronunciation, oral practice, readings on Hispanic culture and civilization, minimum essentials of grammar. A general education course in foreign language.

***2. Elementary (3) I, II**
Three lectures and one hour of laboratory.
Prerequisite: Spanish 1 or one year of high school Spanish.
Continuation of Spanish 1. A general education course in foreign language.

***3. Intermediate (3) I**
Prerequisite: Spanish 2 or two years of high school Spanish.
Reading in Spanish of cultural material, short stories, novels or plays; oral practice; outside reading with oral and written reports. A general education course in foreign language.

***4. Intermediate (3) II**
Prerequisite: Spanish 3 or three years of high school Spanish.
Continuation of Spanish 3. A general education course in foreign language.

5. Intermediate (2) I
Prerequisite: Spanish 2 or two years of high school Spanish.
A practical application of the fundamental principles of grammar by means of oral and written work based on Spanish texts.

6. Intermediate (2) II
Prerequisite: Spanish 5 or three years of high school Spanish.
Continuation of Spanish 5.

10. Conversation (2) I
Prerequisite: Spanish 2 or two years of high school Spanish.
Practice in the spoken language; practical vocabulary; conversation on assigned topics; simple dialogues and plays.

11. Conversation (2) II
Prerequisite: Spanish 10 or Spanish 3, or three years of high school Spanish.
Continuation of Spanish 10.

***40. Spanish Civilization (2) I**
(Same course as Humanities 46.)
Conducted in English. No prerequisite.
The major currents and characteristics of Spanish culture, as expressed through the centuries in literature, art, philosophy, music, and science. A general education course in the area of foreign languages. Not open to students with credit in Humanities 46 or in Spanish 15.

***41. Spanish Civilization (2) II**
(Same course as Humanities 47.)
Conducted in English. No prerequisite.
Continuation of Spanish 40. A general education course in the area of foreign languages. Not open to students with credit in Humanities 47 or in Spanish 16.

UPPER DIVISION COURSES

101A-101B. Conversation and Composition (3-3) Year Course
Beginning Semester I
Prerequisites: Spanish 4 and 6 with a grade of C or consent of instructor.
Translation into Spanish of moderately difficult English prose passages. Free composition in Spanish. Outside reading of modern Spanish plays, with written reports in Spanish. Oral practice in colloquial Spanish with extensive use of phonograph recordings.

102A-102B. Introduction to Spanish Classics (3-3) Year Course
Beginning Semester I
(Offered in 1961-62)
Prerequisites: Spanish 4 and 6 with a grade of C.
Reading from several types of classical literature. Lazarillo de Tormes and other novels of Roguery; selections from Don Quixote, and the Cien Mejores Poesias Castellanas; one drama each from the works of Lope de Vega, Calderon, Alarcon, and Moreto; collateral reading and reports.

104A-104B. Spanish-American Literature (3-3) Year Course Beginning Semester I

(Offered in 1960-61)

Prerequisites: Spanish 4 and 6 with a grade of C.

Reading from representative Spanish-American authors during the colonial, revolutionary and modern periods. Lectures, class reading, collateral reading and reports.

105A-105B. Modern Spanish Drama (3-3) Year Course Beginning Semester I

Prerequisites: Spanish 4 and 6 with a grade of C.

The development of the drama of Spain from the beginning of the nineteenth century to the present time.

110A-110B. Novel and Short Story in Spain (3-3) Year Course Beginning Semester I

(Offered in 1960-61.)

Prerequisites: Spanish 4 and 6 with a grade of C.

The development of the novel and short story in Spain from 1830 to the present time.

***140. Spanish Civilization (2) I**

(Same course as Humanities 146.)

Conducted in English. No prerequisite.

An advanced course in Spanish culture of the past and present, with emphasis on the arts, philosophy, and literature. Lectures, class discussions, outside readings, written reports on individual topics. A general education course in the area of foreign languages. Not open to students with credit in Humanities 146 or in Spanish 115.

***141. Spanish Civilization (2) II**

(Same course as Humanities 147.)

Conducted in English. No prerequisite.

Continuation of Spanish 140. A general education course in the area of foreign languages. Not open to students with credit in Humanities 147 or in Spanish 116.

166. Honors Course (Credit to be arranged) I, II

Refer to the Honors Program.

198. Comprehensive Reading and Survey Course (3) II

Designed to fill up the gaps in the reading done in courses. Class meeting once a week for guidance, reports, and quizzes. Required of all seniors majoring in Spanish.

199. Special Study (1-6) I, II

Individual study. Six units maximum credit.

Prerequisite: Consent of instructor.

GRADUATE COURSES

201. Old Spanish (2) I

Prerequisite: Nine units of upper division Spanish.

A study of the language and literature of Spain from the 12th to the 15th centuries.

204. Seminar in Spanish-American Literature (2) II

Prerequisite: Nine units of upper division Spanish.

Intensive investigation of some phase of Spanish-American literature. A single country, an author, or some special problem will be studied and reported upon.

290. Bibliography (1) See Romance Languages

298. Special Study (1-6) I, II

Individual study. Six units maximum credit.

Prerequisite: Consent of staff; to be arranged with department chairman and instructor.

299. Thesis (3)
Prerequisites: An officially appointed thesis committee and advancement to Candidacy.

Guidance in the preparation of a project or thesis for the master's degree.

Master's degree candidates in Spanish are expected to substitute a comprehensive examination for the thesis. In unusual cases a student may write a thesis with the permission of the department.

SPEECH ARTS

IN THE DIVISION OF FINE ARTS

Professors: Ackley; Earnest (Chairman); Pfaff; Sellman
Associate Professors: Adams, W. J.; Benjamin; Jones; Povenmire; Powell
Assistant Professors: Lee, R. E.; Mills; Norwood; Rogers, P. N.
Lecturers: Reed; Thile

The following majors and minors are offered by the Speech Arts Department: In *arts and sciences* (1) a major in speech arts with the A.B. degree and (2) a major in radio and television broadcasting with the B.S. degree. Two minors are offered: (1) a minor in speech arts and (2) a minor in broadcasting.

In *teaching education:* (1) a teaching major in speech arts is offered with the A.B. degree and special secondary credential; and (2) a teaching major in speech arts leading to the general secondary credential in the postgraduate year. Two teaching minors are offered: (1) a minor in speech arts for the general secondary credential and (2) a minor in speech arts for the general elementary and kindergarten-primary credentials.

Courses in the majors are in addition to 45 units in general education courses. Students taking a speech arts major are not required to complete a minor for the bachelor's degree. Students who plan to take the general secondary credential with a major in speech arts are advised to include in the undergraduate program a teaching minor in another field.

MAJOR IN ARTS AND SCIENCES

Major in Speech Arts With the A.B. Degree

Lower Division. In addition to Speech Arts 3, which is a general education requirement, a minimum of 13 units of lower division courses in speech arts, specializing in the fields of dramatic art, radio, public speaking, or a guided combination of the three.

Upper Division. 24 upper division units in speech arts, including Speech Arts 150, with an emphasis of at least 12 units in one area of concentration (theater, radio, public address, or speech pathology). Recommended patterns in the various areas of emphasis are described below.

Areas of Emphasis

Public Address. Lower division: Speech Arts 1, 4, 60A-60B, and one unit of 61. Upper division: 24 upper division units in speech arts to include Speech Arts 130, 150, 162, 191, 192A, and 192B.

Speech Pathology. Lower division: 13 units in speech arts, including Speech Arts 4. Upper division: 24 upper division units in speech arts to include Speech Arts 150, 170, 174, 176, 177, 178, 179, and 180.

General Theater. Lower division: Speech Arts 1, 5, 11A, 85, 55A or B, and 56. Upper division: 24 upper division units in speech arts to include Speech Arts 118A, 150, 154A, 155, 159, and nine units from Speech Arts 108, 118B, 140A, 140B, 145, 152, 154B, 156, 160, 163.

Design for Theater. Lower division: 13 units in speech arts including Speech Arts 54, 55A or B, 56, and 57. Upper division: 24 upper division units in speech arts to include Speech Arts 140A, 140B, 145, 150, 152, 154A, 154B, and 159.

Radio and Television Broadcasting. Lower division: 13 units in speech arts, including six units from Speech Arts 81A, 81B, 81C; two units from 82A, 82B; and two units from 83A, 83B. Upper division: 24 upper division units in speech arts to include Speech Arts 150, 185, 186, 187, 189; three units from Speech Arts 181 or 184; and four units from Speech Arts 182A, 182B, 183A, 183B; and two units of upper division speech arts electives.

Design for Television. Lower division: Speech Arts 56, 81A, 83A, Art 14B, and three units of speech arts electives. Upper division: 24 upper division units in speech arts to include Speech Arts 140A, 140B, 145, 156, 159, 183A or B, 186, 189, and one additional unit of upper division speech arts electives. Students with this area of emphasis are not required to take Speech Arts 150.

Major in Radio and Television Broadcasting With the B.S. Degree

This major in radio and television broadcasting provides training in all phases of radio and television station operation, programing and production in which the personnel of broadcasting stations and/or contributing organizations will be involved in providing a broadcast service.

Lower Division. Speech Arts 1 (which may be substituted for Speech Arts 3 in general education), Speech Arts 80, six units from 81A, 81B, 81C, two units from 82A, 82B, two units from 83A, 83B, and two units from General Language 30, 31, 32, 33, and Business Administration 71 or qualification by examination (18-21 units). Recommended: Art 6A to be taken in general education.

Upper Division. Speech Arts 159, 182A or B, 183A or B, 185, 186, 187, 189, four units of 188, Political Science 122, and Psychology 122 (29 units), PLUS the requirements in ONE of the following areas of concentration:

Production. Choose one of the following:

(a) *Programing:* Speech Arts 118A, 145, 184 (9 units).

(b) *Technical:* Speech Arts 140A-140B, 145, 156 (12 units).

Writing. Speech Arts 118A-118B, 184, English 195 (12 units).

Business. Speech Arts 181, Business Administration 153, 155 or Journalism 180, and Journalism 102 (12 units).

MINORS IN ARTS AND SCIENCES

Minor in Speech Arts. A minor in speech arts is offered in arts and sciences. The minor consists of 15 to 22 units in speech arts, nine units of which must be in courses carrying upper division credit.

Minor in Broadcasting. A minor in broacasting is offered in arts and sciences. The minor consists of a minimum of 17 units in speech arts to include the following courses: Lower division: Speech Arts 81A, 81B, and two units selected from Speech Arts 82A, 82B, 83A, or 83B (8 units; upper division: three units selected from Speech Arts 185 and 186; six units selected from Speech Arts 181, 182A or B, 183A or B, 184, 185, 186, 187, and 189 (9 units).

MAJORS IN TEACHER EDUCATION

Special Secondary Credential in Speech Arts

Special Secondary Credential in Speech Arts. Students taking this credential must complete a teaching major in speech arts and additional requirements in professional education courses.

Requirements in the Major. Lower division: 19 units to include Speech Arts 11A, 55A or B, 56, 60A or B, 63, 85, and three units of speech arts electives. Upper division: 27 upper division units to include Speech Arts 110, 140A, 150, 151, 159, 170, 191, 192A or B, and six units selected from Speech Arts 108, 118A, 118B, 130, 145, 152, 154A, 154B, 155, 162, 182A, 182B, 183A, 183B.

Professional Courses in Teacher Education. 22 upper division units to include Education 100, 110, 120, 180, 121L, and Health Education 151.

General Secondary Credential

Major for the General Secondary Credential. A teaching major in speech arts is offered for the general secondary credential. Students may complete requirements for this major and the general secondary credential in one of the following ways:

(1) By taking the special secondary credential in speech arts with the A.B. degree; completing requirements in a teaching minor for the general secondary credential; and completing other credential requirements in a postgraduate year, to include four units in speech arts courses numbered 200 (except 280 and 292).

(2) By completing the following: (a) a speech arts major in arts and sciences with the A.B. degree, to include the specific courses outlined for the teaching major and special secondary credential, with a concentration of 12 units in one

area (theater, radio, public speaking, or speech pathology); (b) a teaching minor for the general secondary credential; and other credential requirements in a postgraduate year, to include four units in speech arts courses numbered 200 (except 280 and 292).

Refer to the section of the catalog on Professional Curricula in Teacher Education for a description of requirements in the postgraduate year.

CREDENTIAL TO TEACH EXCEPTIONAL CHILDREN

Credential to Teach Exceptional Children. This credential is available to students who hold a basic credential in kindergarten-primary, general elementary, junior high school, or general secondary education. The student taking this credential may specialize in one of the following areas: (a) speech correction and lip reading in remedial classes, or (b) teaching of the mentally retarded. For a complete description of this credential, refer to the section of the catalog on Professional Curricula in Teacher Education.

MINORS IN TEACHER EDUCATION

General Secondary Credential

Minor for the General Secondary Credential. A teaching minor in speech arts is offered in teacher education for the general secondary credential. This minor, which may be used for the bachelor's degree, consists of a minimum of 21 units to include Speech Arts 3, 4, 11A, 55A or B, 85, zero to one unit from courses numbered 61 and 63, and six to seven upper division units in speech arts courses to be selected in consultation with the departmental representative.

General Elementary and Kindergarten-Primary Credentials

Minor for the General Elementary and Kindergarten-Primary Credentials. This minor is the same as the minor in arts and sciences. The student may emphasize creative speech arts or speech correction. The minor with emphasis in speech correction must be planned in consultation with the adviser for the credential for teaching exceptional children.

THE MASTER'S DEGREE

The master of arts degree with a major in speech arts and the master of arts degree for teaching service with a concentration in speech arts are offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

LOWER DIVISION COURSES

1. Voice and Diction (3) I, II
Exercises and drills to improve the quality, flexibility and effectiveness of the speaking voice leading to good usage in standard American speech. Preparatory to further courses in public speaking and dramatic art.

1-X. Speech for International Students (3)
Training in production of American speech sounds, blending and assimilation, American prose rhythm and oral communications. Emphasis on clarity and intelligibility. Practical work in aural comprehension. Prerequisite: Designation by speech testing committee. (Two units of this course may be counted as fulfilling the general education requirement in Speech Arts 3.)

2. Oral Communication Laboratory (1) I, II
Two hours of laboratory.
Those who fail the speech test must take this course concurrently with Speech Arts 3. This course provides training in articulation, voice control, vocabulary. Individual laboratory assistance on specific speech problems.

***3. Oral Communication (2) I, II**
Training in fundamental processes of oral expression; method of obtaining and organizing material; outlining principles of attention and delivery; practice in construction and delivery of various forms of speeches.

4. Extemporaneous Speaking (3) I, II
Practice in extemporaneous speaking on subjects of current interest, both national and local, with stress laid on the organization and delivery of content material. Forum discussion will provide speakers with the opportunity of assembling facts quickly to meet such questions as any audience situation might demand.

5. Introduction to the Theater (3) I
A survey of theory and practice in the contemporary theater, including its literary, critical, and technical aspects viewed against historical backgrounds. Attendance at selected rehearsals and performances required.

E-6. Speech Workshop for Stutterers (3)
Participation by stutterers in various techniques designed to alleviate stuttering blocks. May be repeated to a maximum of six units.

11A. Fundamentals of Interpretation (3) I
Application of the principles involved in "making words come alive": response to thought and mood, sensory association, emphasis, climax. Practice selections in poetry and prose. Offered as demand requires.

11B. Intermediate Interpretation (3)
Prerequisite: Speech Arts 11A or 55A.
Oral reading of various types of material suitable for popular audiences: stories, humorous sketches, light and sentimental verse.

54. Stage Make-up (2) II
One lecture and three hours of laboratory.
Practice in the application of stage make-up including straight and character make-up.

55A. Elementary Acting (3) I
Three lectures per week and an additional 32 hours of laboratory per semester.
Development of the individual's ability to express thought and emotion through the effective use of the voice and body. These fundamental skills may be applied to stage, radio, and television acting.

55B. Intermediate Acting (3) II
Three lectures per week and an additional 32 hours of laboratory per semester.
Prerequisite: Speech Arts 55A or consent of instructor.
Continuation of 55A emphasizing more emotional material from longer scenes.

56. Dramatic Production (3) I
Two lectures and three hours of laboratory.
Technical practices and organization of production for theater and television. Practice in drafting and construction of stage scenery for the college dramatic productions.

57. Elementary Stage Costume (3) I
Two hours lecture-demonstration and three hours of laboratory.
A study of pattern drafting, draping, color harmony and the use of fabrics for stage costuming. Students will receive practical training in the construction of stage costumes.

60A-60B. Argumentation and Debate (3-3) Year Course Beginning Semester I
Obtaining and organizing of evidence and the construction and use of the brief; study and discussion of current issues; the presentation of formal and informal debates. Attention to intramural and intercollegiate debating.

61. Intercollegiate Debate (1) I, II
Two hours of activity.
May be repeated to a total of four units, including lower division and upper division courses, 61 and 161.

63. Verse Choir (1) I, II
Two hours.
Participation in verse speaking chorus to develop quality, range of tone, and ability in dramatic visualization of poetry. May be repeated to a total of four units, including lower division and upper division courses, 63 and 163.

80. Backgrounds in Broadcasting (3) I
The theory and operation of radio and television broadcasting; history of broadcasting and types of programs. Relates the four major phases of broadcasting; administration, programming, engineering, and advertising.

81A-81B. Survey of Radio and Television Techniques (3-3)
Year Course Beginning Semester I
Station operation methods; techniques of announcing, acting, directing, sound effects, music integration; radio and television scripting and continuity.

81C. Technical Operations for Radio and Television (3) I
Radio-television control room and studio techniques necessary to maintain a broadcast operation. Includes the operation of audiovideo equipment in radio-television production, i.e., microphone techniques, video control, camera operation, recording, kinescope and microwave operations.

82A-82B. Radio Workshop (2-2) Year Course Beginning Semester I
Prerequisite: Speech Arts 81A or 81B or concurrent registration with the workshop.
Radio program production, with experience in announcing, recording, acting, engineering, sound effects, music, and writing for programs produced over local commercial radio stations. Four units maximum credit in 82A, 82B, 182A, 182B.

83A-83B. Television Workshop (2-2) Year Course Beginning Semester I
Prerequisites: Speech Arts 81A or 81B and 55A or 56A, and consent of instructor. 81A or 81B may be taken concurrently with the workshop.
Television program production, with experience in announcing, acting, prodution art, lighting, video and audio techniques, special effects, telecine, and writing for programs produced over local commercial television stations. Four units maximum credit in 83A, 83B, 183A, 183B.

85. Programming and Production for Educational Broadcasting (3) I
The planning and production of educational radio and television broadcasts. This course is designed for students interested in handling broadcast activities in speech and drama, classes and workshops for high schools and junior colleges. Not open to students with credit for Speech Arts 80 or 81A. Students in the occupational program should not enroll in this course.

UPPER DIVISION COURSES

108. Advanced Interpretation (3) I, II
Prerequisite: Speech Arts 11A or 11B, or consent of instructor.
Analysis of techniques of literary composition as guides to oral interpretation. Achievements of the creative artist as they affect the interpretative artist.

110. Creative Dramatics (2) II
Practical training in the principles and techniques of creative dramatization for work with children in the classroom and recreation. Emphasis on the development of the child emotionally and socially through dramatic improvisation.

118A. Play Analysis (3) I
Deals with the one-act play and its technique. New plays are read and discussed in class during their period of development.

118B. Playwriting (3) II
Analyses of long plays. Students engage in creative writing.

130. Semantics (3) II (Same course as Philosophy 130)
Recognition of various types of linguistic meaning; logical distinctions in discourse; distinction between real and verbal disagreement; recognition and correction of semantic fallacies. Not open to students with credit for Philosophy 130.

140A-140B. Scene Design for Stage and Television (3-3) I, II
Prerequisite: Speech Arts 56 or consent of instructor.
The application of the principles of design, color and perspective to the designing of various types of dramatic productions; the history of stage design. Students will learn to make sketches and models and paint scenery for departmental stage and television productions.

142. Theater Workshop (2) I, II, Summer (3 or 6)
Four hours when offered for three units.
A laboratory to give the student a variety of experience in the theater including acting, lighting, scenery, costumes and stage management. May be repeated for a maximum of six units.

143-S. Workshop in Educational Television (6) Summer
(Same course as Education 143-S)
Open to teachers and students interested in instruction by television.
The procedures and theories of television production as it pertains to closed-circuit and instructional use of television. The selection and utilization of program content and the method of presenting material through the television medium will be discussed and demonstrated. Not open to students with credit for Education 143-S.

145. Stage and Television Lighting (3) I
Principles and practice of light, color, lighting instruments, and control equipment, including the design and planning of lighting for plays and television. Students will serve as light crews for departmental productions.

150. Phonetics (3) I, II
Auditory and kinesthetic analysis of the sounds of the English language. Valuable as a corrective course in pronunciation and articulation. Required of speech majors and those seeking the speech correction credential.

151. Management of Speech Arts Activities (1) I, II
Planning, preparation, management and supervision of speech and drama tournaments, festivals and other inter-scholastic and intra-scholastic activities under the supervision of the speech arts staff. May be repeated for a maximum of two units.

152. History and Design of Costume (Stage) (3) II
Two hours lecture-demonstration and three hours of laboratory.
A study of costume from Egyptian period to the present. Emphasis on the use of historical costumes on the stage. Costume designs for one stage production. Drawing and painting experience desirable but not necessary.

154A-154B. History of the Theater (3-3) Year Course Beginning Semester I
A study of the theater from primitive times to the present. Special attention will be given to the theater as a mirror of the social and cultural background of the various countries and periods in which it is studied. (Speech Arts 154B may be taken without 154A.)

155. Advanced Acting (3) II
Prerequisites: Speech Arts 55A and 55B.
Problems in characterization: acting styles of the Elizabethan and Eighteenth Century periods.

156. Advanced Dramatic Production (3) II
Two lectures and three hours of laboratory.
Prerequisite: Speech Arts 56 or consent of instructor.
Further study of scenery drafting and construction, with attention to the multiple-set play. Planning of scenery construction and rigging for stage and television productions.

159. Stage Direction (3) I
Planned for prospective directors of plays in schools, colleges and community theaters. Through lectures, discussions, and exercise projects the student will become acquainted with the principles, procedure and methods of stage direction.

160. Stage Direction Laboratory (1) I, II
Prerequisite: Speech Arts 159 or concurrent registration.
This will consist of experience in directing a one-act play before a departmental or public audience. It may be taken with or it may be preceded by 159. May be repeated for a total of two units.

161. Advanced Intercollegiate Debate (1) I, II
Two hours of activity.
May be repeated to a total of four units, including lower division and upper division courses, 61 and 161.

162. Advanced Argumentation (3) I
Prerequisite: Consent of instructor.
Presents a more detailed study of analysis, preparation of briefs, types of reasoning and use of evidence; opportunity for participation in intercollegiate debate.

163. Advanced Verse Choir (1) I, II
Two hours.
Participation in verse speaking chorus to develop quality, range of tone, and ability in dramatic visualization of poetry. May be repeated to a total of four units, including lower division and upper division courses, 63 and 163.

164-S. Verse Choir Directing (2) Summer
Organizing a given group as a verse choir, considering age, voice quality, background, selection and arrangement of material, and techniques of directing. Demonstrations and practice.

166. Honors Course (Credit to be arranged) I, II
Refer to the Honors Program.

170. Speech Development (3) I
Development of normal speech in children; typical and common speech defects in preschool and school children; basic techniques for their prevention and correction.

172. Mechanics of Speech Production (3)
Prerequisite: Psychology 5.
Lectures, readings, discussions and demonstrations presenting the structure and function of the neuro-muscular system involved in respiration, phonation, resonance and articulation, physiology of the speech mechanism and the physics of sound transmission. Recommended for speech majors.

173. Functional Problems of Speech and Hearing (3)
Prerequisite: Speech Arts 170.
Phenomena of human communication; relation between disorders of personality and difficulties in communication.

174. Principles and Methods of Speech Correction (3) I
(Same course as Education 174)
Prerequisites: Speech Arts 150 and 170, or consent of instructor.
Etiology and treatment of the more common speech disorders, including physiology of speech, voice disorders, cleft palate, foreign dialect. Twenty-five hours of clinical participation required or a special study for nonparticipants in the clinic. Not open to students with credit in Education 174.

E-175. The Role of Parents in Problems of Speech Correction (2) (Extension)
Assistance to parents in understanding the speech-handicapped child. Open to parents of children admitted to the speech clinic. May be repeated for a total of four units.

176. Stuttering and Neurological Disorders (3) II
(Same course as Education 176)
Three lectures and 25 hours of clinical participation or a special study for nonparticipants in the clinic.
Prerequisites: Speech Arts 150 and 170, or consent of instructor.
Clinical survey of newest methods of speech correction. Special emphasis given to causes and treatment of stuttering, cerebral palsy speech problems and aphasia in adults and children. Not open to students with credit in Education 176.

177. Aural Rehabilitation (3) I (Same course as Education 177)
The adjustment of the hard-of-hearing group with emphasis on the public school child. State and county hearing programs; audiometric techniques with practice; educational, classroom, and social problems. Meets audiometric certification requirement. Not open to students with credit in Education 177.

178. The Teaching of Lipreading (2) II (Same course as Education 178)
History, theory and methods of lipreading. Aids for the classroom teacher; program and materials of instruction for the specialized teacher. Not open to students with credit in Education 178.

179. Clinical Methods in Speech Correction (3) II
Prerequisites: Speech Arts 150, 170, 174, and 176, or consent of instructor.

Construction and use of materials and equipment applicable to speech therapy; clinical techniques in speech correction, including case histories, interviews and speech tests; parent and teacher counseling.

180. Field Work in Clinical Practice in Speech Correction (2) I, II
Field work. Maximum credit six units.

Prerequisites: Speech Arts 150, 170, 174, and 176, or consent of instructor.

Supervised work with representative speech problems in San Diego State College children's clinic; "staffing" of such cases; speech testing; recordkeeping.

181. Radio and Television Station Management and Advertising (3) I
(Same course as Business Administration 156)

Prerequisites: Speech Arts 81A and 81B, and consent of instructor.

Administrative and commercial methods of radio and television station operation. Advertising trends in broadcasting, audience and program measurement, publicity and promotion; traffic. Not open to students with credit for Business Administration 156.

182A-182B. Radio Workshop (2-2) Year Course Beginning Semester I
Prerequisites: Speech Arts 81A or 81B. Speech Arts 81A or 81B may be taken concurrently with the workshop.

Radio program production with experience in announcing, recording, acting, engineering, sound effects, music and writing for programs produced over local commercial radio stations. Four units maximum credit in 82A, 82B, 182A, 182B.

183A-183B. Television Workshop (2-2) Year Course Beginning Semester I
Prerequisites: Speech Arts 81A or 81B and 55A or 56, and consent of instructor. Speech Arts 81A or 81B may be taken concurrently with the workshop.

Television program production, with experience in announcing, acting, production, art, lighting, video and audio techniques, special effects, telecine, and writing for programs produced over local commercial television stations. Four units maximum credit in 83A, 83B, 183A, 183B.

184. Writing for Radio and Television (3) II (Same course as Journalism 184)
Prerequisites: Speech Arts 81A and 81B, or equivalent, and consent of instructor.

Scripts, documentaries, music, continuity for each program type. Correlates writing with radio and television acting and announcing styles. Program formats. Not open to students with credit for Journalism 184.

185. Radio Production Directing (3) I
Prerequisites: Speech Arts 81A and 81B, two units from 82A-82B-182A-182B, and consent of instructor.

Directing procedure for all types of radio programs. Production of radio workshop programs.

186. Television Production Directing (3) II
Prerequisites: Speech Arts 81A, 81B, 159, two units from 83A-83B-183A-183B, and consent of instructor.

Directing procedure and analysis for all types of television programs. Production of television workshop programs.

187. Radio and Television News (3) I (Same course as Journalism 104)
Gathering, writing, and editing news in special forms required by radio and television; processing wire service copy, still pictures and kinescopes; filming, editing and scripting news on motion pictures; using recorders to report special events. Not open to students with credit for Journalism 104.

188. Field Training in Radio and Television (2-4) I, II
Prerequisites: Senior standing and consent of instructor.

Four units maximum credit.

Six to twelve hours per week (2-4 units) on-the-job participation at radio and television stations. Work done in the field of the student's emphasis, i.e., sales and administration, writing, production, and programing.

189. Motion Picture Techniques for Television (3) I
The use of films in television production. Motion picture production techniques as they apply to television. Kinescope recording and operation of the telecine equipment.

190. Rhetorical Theory (3) II
An analysis of rhetorical theory with special attention to Plato, Aristotle, Cicero, Quintilian, Cox, Wilson, Blair, Campbell, Whately, Bain, and modern authors on public speaking. The development of a theory and rhetorical criticism, culminating in a critical evaluation of contemporary oratory.

191. Organized Discussion (3) II
Prerequisite: Speech Arts 60.
Consideration of the symposium, the panel, the open forum, the business session, and varieties of conference speaking. Emphasis upon organization and presentation. Attention to parliamentary procedure for informal groups.

192A-192B. Advanced Public Speaking (3-3) Year Course Beginning Semester I
Prerequisite: Speech Arts 4.
Careful attention given to the preparation and delivery of longer speeches, using as models classics in the field of oratory.

199. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of instructor.

GRADUATE COURSES

243. Seminar in Staging Practices for Theater and Television (3)
An investigation of the recent developments of modern staging facilities. The application of technological advances and electro-mechanical devices to the scenic arts for theater and television.

244. Seminar in Stage Direction (3)
Prerequisite: Speech Arts 159.
A discussion of the aesthetic principles and the practices of stage direction with an emphasis on styles and historical periods.

245. Seminar in Lighting for Stage and Television (3)
Prerequisite: Speech Arts 145.
Discussion of principles concerned with the aesthetic and the technical problems of lighting in stage and television.

246. Seminar in Design for Stage and Television (3)
The principles of design in the theater with an emphasis on the historical development of theatrical costume or scenic environment. The investigation of recent tendencies in styles and their evolution. Each section may be taken once for credit.

A. Costume Design
Prerequisite: Speech Arts 152.

B. Scenery Design
Prerequisites: Speech Arts 140A, 140B, and 156.

247. Seminar in History of the Theater and Drama (3)
Prerequisites: Speech Arts 154A and 154B.
Detailed examination of the important periods, personalities, and theater structures in connection with this general field.

271. Seminar: Functional Problems of Speech (3) I
Prerequisites: Speech Arts 174 and 176, or consent of instructor.
Theoretical consideration of etiologies and symptomatologies of speech disorders; principles of nonmedical therapy; survey of theories and experiments relating to functional speech disorders.

272. Seminar: Organic Speech Disorders (3) II
Prerequisites: Speech Arts 174 and 176, or consent of instructor.
Survey of theories and experiments relating to organic speech disorders and their management.

280. Field Work in Clinical Practice in Speech Correction (2) I, II
Prerequisites: Speech Arts 174 and 176, or consent of instructor.
Supervised work with representative advanced speech cases such as stuttering, aphasia, laryngectomies, etc. May be repeated for a maximum of four units, only two of which may be used for graduate credit toward an advanced degree.

281. Seminar in Broadcasting (3)
Reports and discussion involving research in some aspect or problem in radio and television broadcasting. This seminar analyzes procedure and trends in educational and commercial broadcasting. Two of the following seminar topics may be taken for a total of six units:

A. Management
Prerequisites: Speech Arts 181, Psychology 122, Business Administration 153, Journalism 102 and 180.

B. Programing
Prerequisites: Speech Arts 182, 183, 185, 186, and 189.

C. Research
Prerequisites: Speech Arts 181, Political Science 122, and Psychology 122.

D. Writing
Prerequisites: Speech Arts 118A, 118B, 184, and English 195.

291. Seminar in Public Address (3)
Prerequisites: Speech Arts 190 and 192A or 192.
Advanced problems in rhetorical theory and analysis.

292. Methods in Research and Bibliography (3)
The use of basic reference books, journals, pertinent bibliographies, and other methods of research in the various areas of speech and theater.

298. Special Study (1-6) I, II
Individual study. Six units maximum credit.
Prerequisite: Consent of staff; to be arranged with department chairman and instructor.

299. Thesis or Project (3) I, II
Prerequisites: An officially appointed thesis committee and advancement to candidacy.
Guidance in the preparation of a project or thesis for the master's degree.

ZOOLOGY

IN THE DIVISION OF LIFE SCIENCES

Professors: Crouch; Harwood; Myers; Olson, A. C. (Chairman); Taylor, K. M.; Tucker
Associate Professors: Bohnsack; Crawford, R.W.; Jameson; Ratty
Assistant Professors: Barham; Brandt; Huffman; McBlair; Norland; Shepard, D. C.; Taylor, M. A.
Lecturer: Wilton

A major in zoology is offered with the A.B. or B.S. degree in *arts and sciences.* Courses in the major are in addition to 45 units in general education courses, except that nine units in the natural sciences may be counted in general education. Zoology majors are not required to complete a minor for the bachelor's degree.

A minor in zoology is offered in *arts and sciences.*

MAJORS

Major With the A.B. Degree

Lower Division. Biology 5, or 3 and 4; Biology 15; Zoology 50 and 51; Chemistry 1A-1B or 2A-2B; and Physics 2A-2B and 3A-3B. Recommended: French or German and Mathematics 21 and 22.

Upper Division. 24 upper division units in zoology and biology, including Zoology 100 and Biology 101 and 155.

Major With the B.S. Degree

Lower Division. Biology 5, or 3 and 4; Biology 15; Zoology 50 and 51; Chemistry 1A-1B or 2A-2B; and Physics 2A-2B and 3A-3B. Recommended: French or German and Mathematics 21 and 22.

Upper Division. 36 upper division units in zoology and biology, or approved related fields, including Zoology 100 and Biology 101 and 155.

MINOR

A minor in zoology is offered in *arts and sciences.* The minor consists of 15 to 22 units in zoology, six units of which must be in courses carrying upper division credit.

THE MASTER'S DEGREE

The master of arts degree with a major in biology, the master of arts degree for teaching service in life science with a concentration in zoology, and the master of science degree in applied biology are offered. For further information, refer to the Bulletin of the Graduate Division and to the section of this catalog on the Graduate Division.

LOWER DIVISION COURSES

8. Human Anatomy (4) I, II
Two lectures and six hours of laboratory.
Prerequisite: An introductory course in high school or college biology or zoology.
Systems of the human body and their interrelationships.

9. Human Physiology (4) I, II
Two lectures and six hours of laboratory.
Prerequisites: Zoology 8 or 51; Chemistry 2A-2B.
Functions of the human body: emphasis on the circulatory, muscular, and nervous systems. Not open for credit to students with credit for Zoology 22.

22. Principles of Human Physiology (3) II
Prerequisite: A college course in biology or human anatomy.
A lecture course in the principles of human physiology with special emphasis on nerve and muscle physiology. Not open to students with credit for Zoology 9.

23. Human Physiology Laboratory (1) II
Three hours of laboratory.
Prerequisite: Zoology 22 or concurrent enrollment.
Laboratory work in human physiology. Not open to students with credit for Zoology 9.

50. Invertebrate Zoology (4) I, II
Two lectures and six hours of laboratory.
Prerequisite: Biology 5.
Structure, function, relationships and significance of invertebrate animals as shown through a study of selected invertebrate types.

51. Comparative Anatomy of the Vertebrates (4) I, II
Two lectures and six hours of laboratory.
Prerequisite: Biology 5.
Dissection, study and comparison of organ systems of typical vertebrates. (Formerly Zoology 106.)

UPPER DIVISION COURSES

100. Embryology (4) I, II
Two lectures and six hours of laboratory.
Prerequisites: Biology 5, or Biology 3 and consent of instructor.
The development of vertebrates as illustrated by the frog, chick, and pig.

108. Histology (4) II
Two lectures and six hours of laboratory.
Prerequisites: Either Biology 5 or 3 and 4. Recommended: Zoology 100.
A study of the microscopic structures and differentiation of tissues and organs of the vertebrates, especially mammals.

112. Marine Invertebrates (4) I
Two lectures and six hours of laboratory or field work.
Prerequisite: Biology 5, or Biology 4 and consent of instructor.
Identification and study of behavior and life histories of invertebrates of the San Diego region. Frequent collecting trips to the beaches required.

114. Natural History of the Vertebrates (4) II
(Not offered 1959-60.)
Two lectures and six hours of laboratory.
Prerequisite: Biology 5, or Biology 3 and 4.
Natural history, distribution, and classification of vertebrate animals; emphasis on local forms.

115. Ichthyology (4) I
Two lectures and six hours of laboratory.
Prerequisite: Biology 15.
Evolution, interrelationships, structure, identification, habits, and ecology of fishes.

117. Ornithology (4) II
One lecture and six hours of laboratory or field excursions, and a field project.
Prerequisite: Biology 5, or Biology 4 and consent of instructor.
The study and identification of birds, especially those of the Pacific Coast and the San Diego region.

119-S. Field Zoology (4) Summer
Two lectures and six hours of laboratory.
Prerequisite: A course in college biological science or consent of instructor.
Observational methods; collecting techniques; identification, ecology, and behavior of Southern California animals. Primarily for students not majoring in the Life Sciences Division.

121. General Entomology (4) II
Two lectures and six hours of laboratory.
Prerequisite: Biology 5, or Biology 4. Recommended Biology 102.
Structure, physiology, natural history, and classification of insects.

122. Advanced Entomology (4) I
(Not offered 1959-60)
Two lectures and six hours of laboratory.
Prerequisite: Zoology 121.
Intensive treatment of the areas introduced in Zoology 121.

123. Immature Insects (3) II
(Not offered 1959-60)
Two lectures and three hours of laboratory.
Prerequisite: Zoology 121.
Collection, preservation, identification, and biological study of the immature stages of the different insect orders. Course designed to meet the needs of students specializing in invertebrate zoology, agricultural and medical entomology, parasitology, and systematics.

125. Economic Entomology (4) II
Two lectures and six hours of laboratory.
Prerequisite: Biology 5, or Biology 4 and consent of instructor.
Course designed for students of agriculture and horticulture. Emphasis is placed on determination and control of insects affecting plants. Quarantine measures are also studied.

126. Medical Entomology (3) I
Two lectures and three hours of laboratory.
Prerequisite: Biology 5, or Biology 4 and consent of instructor.
The role of insects and other arthropods in transmission and causation of human diseases.

128. Parasitology (4) I

Two lectures and six hours of laboratory.

Prerequisite: Biology 5, or Biology 4 and consent of instructor.

Study of animal parasites with special reference to those of man. Laboratory including identification of important parasites of man, and collection and preservation of local forms.

142. Comparative Animal Physiology (4) II

Two lectures and six hours of laboratory.

Prerequisite: Biology 101 (Zoology 101), or consent of instructor.

The functional and phylogenetic aspects of responses and nutrition throughout the animal kingdom.

***165. Human Heredity (2) I, II**

Presentation of selected principles of heredity as related primarily to human inheritance. Designed primarily for nonscience majors. Two lectures per week. A life science general education course in the area of the natural sciences.

166. Honors Course (Credit to be arranged) I, II

Refer to the Honors Program.

199. Special Study (1-6) I, II

Individual study. Six units maximum credit.

Prerequisites: 15 units in zoology with a grade of A or B and consent of instructor.

GRADUATE COURSES

298. Special Study (1-6) I, II

Individual study. Six units maximum credit.

Prerequisite: Consent of staff; to be arranged with department chairman and instructor.

299. Thesis (3)

Prerequisites: An officially appointed thesis committee and advancement to candidacy.

Guidance in the preparation of a project or thesis for the master's degree.

SCHOLARSHIPS AND AWARDS

Selection of applicants is made on the basis of adequate scholarship, special skills and/or need. Request for an application form should be sent to the Office of the Dean of Activities, San Diego State College.

APPLICATION DEADLINES

Scholarship awards are announced in January and May of each year. Students planning to enter as freshmen in the fall semester of 1960 may file applications in the Office of the Dean of Activities until April 15, 1960.

Students currently enrolled in San Diego State who wish to apply for scholarships to be used in the spring semester of 1960 must file completed application forms in the Office of the Dean of Activities by October 16, 1959. Applications for scholarships to be used in the fall semester of 1960 will be accepted in the Office of the Dean of Activities until March 18, 1960.

SCHOLARSHIPS AND AWARDS GRANTED BY THE FACULTY COMMITTEE ON SCHOLARSHIPS

SCHOLARSHIPS AVAILABLE TO FRESHMEN

Scholarships listed below, for which freshmen may apply, are carefully described under the name of the scholarship. They are as follows:

Athletic Scholarships
Clair Burgener Speech
M. H. Golden Construction Co.
Interfraternity Council Basketball
Kay Jewelers
Kiwani-Annes
Art Linkletter
Percie Bell Senn Public Speaking
DeWitt Bisbee Williams

ACCOUNTING

SAN DIEGO CHAPTER OF THE INSTITUTE OF INTERNAL AUDITORS. An annual $100 award to a student entering graduate work in the field of accounting. Nominations are to be made by the faculty of the Accounting Department.

ART

SPANISH VILLAGE ART ASSOCIATION, INC. A $75 scholarship each semester will be given an art major in senior year. Nominations are made by the Art Department.

ATHLETICS

ATHLETIC SCHOLARSHIPS. A number of scholarships, varying in amount to a maximum of $250 each, available each year to students participating in intercollegiate athletics. Scholarships are renewable annually for recipients who meet specified standards of scholarship and citizenship. Apply to Director of Athletics, San Diego State College.

M. H. GOLDEN CONSTRUCTION CO. $250 will be given annually to a student recommended by the football coach. The student must be regularly enrolled and contributing to the football program and meet the specified standards of scholarship and citizenship.

INTERFRATERNITY COUNCIL BASKETBALL SCHOLARSHIP. A $30 scholarship awarded a basketball player either spring or fall semester. Only regularly enrolled students need apply.

BUSINESS ADMINISTRATION

EXECUTIVES' SECRETARIES, INC., SAN DIEGO CHAPTER. Two annual $200 scholarships for upper division women students majoring in business education. Must have a "B" average.

MUTUAL LIFE INSURANCE CO. OF NEW YORK. Two $50 scholarships to male undergraduate students, one in upper division, one in lower division, majoring in insurance.

SAN DIEGO UNION-TRIBUNE CHARITIES. $100 a year to a junior and $200 to a senior in the field of advertising, business and general executive training.

EDUCATION

AMERICAN ASSOCIATION OF UNIVERSITY WOMEN—SAN DIEGO BRANCH. A scholarship awarded annually by Mrs. W. O. Shackelford, a member of the San Diego Branch of the American Association of University Women, to encourage qualified and gifted women to enter the teaching profession. Sixty dollars a semester is given to an undergraduate woman student in her junior or senior year of college who is preparing for elementary or secondary school teaching. She must have a "B" average or better. The recipient is required to teach at least one year after graduation or repay the amount received from this award.

ASSOCIATION OF CHILD EDUCATION. A $75 scholarship given to a student in the Kindergarten-Primary program. The award is customarily made to an upper division student showing promise who is in need financially.

CAMPUS LABORATORY SCHOOL PARENTS ORGANIZATION. A $50 scholarship to a student admitted to Elementary Teacher Training, showing need.

KAPPA BETA NU. A $100 scholarship offered annually to a junior or senior woman student in elementary teacher education. Applicant must be a resident of San Diego County who is in financial need.

KAPPA DELTA PI. Two $25 scholarships awarded annually by Kappa Delta Pi of San Diego State College for students in teacher education.

PACIFIC BEACH JUNIOR WOMEN'S CLUB. $400 will be awarded during the school year for person or persons preparing for credential to teach mentally retarded. Qualified applicants must have been admitted to the program for teacher education.

PHI EPSILON PHI—Alpha Chapter. One $50 scholarship awarded to a student majoring in education who is in need of financial assistance and who has sound scholastic standing.

PI LAMBDA THETA. One $50 scholarship awarded annually to a senior woman in field of education. Scholarship and need considered.

SAN DIEGO CITY TEACHERS ASSOCIATION. Two scholarships of $100 each presented each year to prospective teachers, with no restrictions as to college year.

SAN DIEGO COUNTY FEDERATION OF WOMEN'S CLUBS. Various amounts given to students in the education field.

SANTEE FACULTY CLUB. A $50 scholarship awarded annually to a senior in education who at some time has attended Santee Elementary School.

TEACHER EDUCATION SCHOLARSHIP. $1,200 awarded by the California Congress of Parents and Teachers to three or more students. Selections are made upon the following conditions: (1) the recipient must have high qualifications and be in financial need; (2) the scholarship will be granted to students training to teach in the elementary public schools of California; and (3) the award shall be limited to students in the junior and senior years.

TEACHER EDUCATION SCHOLARSHIPS. $800 awarded by the California Congress of Parents and Teachers, Inc., to be granted only to fifth year students training to teach in the public secondary schools of California on a general secondary credential.

ENGINEERING

ENGINEERS CLUB OF SAN DIEGO. $100 awarded annually to student majoring in engineering. This award is made in the second semester.

MAJOR FRANK H. PAGE ENGINEERING. Donated by San Diego Chapter of the American Society for Metals. Five $50 scholarships to upper division students with interest in metals; engineering majors with "B" average in major are preferred.

SAN DIEGO STATE COLLEGE ALUMNI ENGINEERS ORGANIZATION. A $50 scholarship given annually to a student majoring in engineering. He must have completed between 30 and 89 units when he applies. He must have a "C" grade average.

SAN DIEGO UNION-TRIBUNE CHARITIES. $100 a year to a junior and $200 to a senior in the field of engineering.

WEST COAST ELECTRONIC MANUFACTURERS ASSOCIATION. Several scholarships of $250 awarded to juniors and seniors without discrimination as to race, creed or color. Students selected must be interested in electronic engineering or allied branches and be preparing for a technical education.

FOREIGN LANGUAGES

LESLIE P. BROWN. $60 a semester awarded a student majoring in any foreign language.

HISTORY

PHI ALPHA THETA (BETA KAPPA CHAPTER). A $50 scholarship awarded to a history major. Applications should be made during the last semester of junior year to the Chairman of the History Department.

JOURNALISM

SAN DIEGO UNION-TRIBUNE CHARITIES. $100 a year to a junior and $200 to a senior in the field of journalism.

MUSIC

MUSIC DEPARTMENT SCHOLARSHIPS. A limited number of Music Department scholarships covering the costs of tuition, books, and other supplies available to regular course music majors. The awards of these scholarships are based upon financial need, scholarship, and performing talent as demonstrated in auditions before a scholarship committee of the Music Department. Application may be made directly to the Music Department, San Diego State College.

JULIUS LEIB MEMORIAL MUSIC SCHOLARSHIP. $25 to student regularly enrolled with major in music, and interest in string instruments, cello, viola, violin.

SIGMA ALPHA IOTA ALUMNAE MARGARET SWOPE SCOTT MEMORIAL SCHOLARSHIP. A $50 scholarship awarded a deserving woman student majoring in music. Special consideration will be given to one specially gifted in some phase of musical performance.

NURSING

SAN DIEGO AND IMPERIAL COUNTIES SECTION CALIFORNIA SCHOOL NURSE ORGANIZATION. $100. $50 a semester to a sophomore, junior, or senior in the Nursing Program. Must be recommended by Chairman of Nursing Department.

SAN DIEGO COUNTY TUBERCULOSIS AND HEALTH ASSOCIATION. Two $100 scholarships awarded in field of nursing. Students must have completed at least one year in nursing education.

PHYSICS

KIWANIS CLUB OF HILLCREST—NUCLEAR PHYSICS. $300 a year to a junior and a senior student interested in nuclear physics, renewable for second year. Nominations for awards are made by Physics Department.

SAN DIEGO UNION-TRIBUNE CHARITIES. $100 a year to a junior and $200 a year to a senior in the field of electronics.

WEST COAST ELECTRONIC MANUFACTURERS ASSOCIATION. Several scholarships of $250 awarded to juniors and seniors without discrimination as to race, creed or color. Students selected must be interested in electronic engineering and may be physics majors.

SPEECH ARTS

BURGENER, CLAIR W., SPEECH SCHOLARSHIP. A four-year scholarship of $50 per semester awarded to an entering freshman or advanced standing student who is outstanding in public speaking and general scholarship. Recommendations will be made by the Speech Arts Department with final selection by the Committee on Scholarships.

SAN DIEGO WOMAN'S CLUB. An annual award of $50 given to a student who is a speech arts major.

SENN, PERCIE BELL, SCHOLARSHIP IN PUBLIC SPEAKING. An annual scholarship of $50 to $100 made possible by Admiral Elliott Senn for the purpose of assisting students in public speaking. This is awarded to an entering freshman or any qualified student in the field of debate.

SIGMA ALPHA SORORITY—Gamma Alpha Chapter. $50 a semester to a major in speech correction recommended by Speech Arts Department. Recipient must spend three hours per week in clinical work of the Speech Arts Department.

GENERAL

(Several majors may qualify for some of these scholarships. No specified major is required for others.)

AMERICAN ASSOCIATION OF UNIVERSITY WOMEN—SAN DIEGO BRANCH —GERTRUDE SUMPTION BELL SCHOLARSHIP. A $50 scholarship given annually to a woman student majoring in English, Psychology or Education.

CALIFORNIA STATE EMPLOYEES, CHAPTER 17. A $60 award given each semester to a senior student who plans to go into public service. The recipient must have a "C" average overall and "B" in major.

CAP AND GOWN. One $50 scholarship awarded annually to an upper division woman student who has attended San Diego State College for at least one semester and who has maintained at least a "B" average in scholarship for her entire college career.

CHI OMEGA FRATERNITY. A $50 scholarship awarded annually to a student outstanding in the Sociology or Psychology Department.

DAUGHTERS OF THE AMERICAN REVOLUTION. Two scholarships of $50 each presented each spring, one to a young man and the other to a young woman outstanding in citizenship and Americanism. Presentation of awards is made at a luncheon on Flag Day, which is given by the Daughters of the American Revolution.

DELTA DELTA DELTA—San Diego Alumnae Chapter. $100 annually; $50 a semester to a single woman student having a B average who is in the upper division. Selection of recipient made by the Alumnae of Tri Delta.

FACULTY DAMES. Two scholarships of $50 each given annually to deserving women students.

FLEISCHNER, ANNA S., SCHOLARSHIP, given by Dr. and Mrs. Charles A. Fleischner. An award of $150 given annually to a needy, physically handicapped student, irrespective of race, color or creed.

KAY JEWELERS SCHOLARSHIP. $30 a semester for eight semesters awarded an entering freshman. This scholarship is to be given alternating years to men and women students. In the fall semester, 1959, the scholarship will be awarded to a young woman. Selection is made from applications received from high schools. Consult your senior counselor in high school.

KIWANI-ANNES (College Area). A $50 scholarship awarded annually.

LINKLETTER, ART. Four $50 scholarships made available each June to students graduating from San Diego City and County high schools: (1) one to a girl and one to a boy graduating from high schools with enrollment of 1,000 or over; and (2) one to a boy and one to a girl from high schools with enrollment under 1,000. Selection is based on scholarship, citizenship, and need. Applications should be made through the high school counselor.

LIONESS CLUB, EAST SAN DIEGO. $50 annually to a student in financial need, who is selected by the San Diego State College Committee on Scholarships.

NATIONAL LEAGUE OF AMERICAN PEN WOMEN—SAN DIEGO BRANCH. A scholarship of $50 awarded annually to an outstanding woman student. Selection will be made from students in the fields of art, music, and creative writing.

SOROPTIMIST INTERNATIONAL OF SAN DIEGO. A $200 scholarship to a senior or graduate woman student regularly enrolled in the division of Physical Sciences with preference being given to a student enrolled in engineering, chemistry, or physics. In selecting the student particular weight will be given to leadership qualities, scholastic ability and attainment.

WILMIA TYLER-TROTT. Annual scholarships of from $50 to $100 made possible by Wilmia Tyler-Trott. These scholarships will be awarded to deserving students selected by the San Diego State College Committee on Scholarships.

SOUTHLAND CLUB SCHOLARSHIP. $50 a semester made available by the Southland Club for Business and Professional Women to a junior or senior woman student who plans to enter business or a profession. The student must have at least a "B" average; she must have been graduated from a San Diego City or County high school and must be of good moral character and in financial need.

DEWITT BISBEE WILLIAMS MEMORIAL SCHOLARSHIP. $100 or more will be awarded to a worthy student or students already enrolled in college. Application forms may be obtained from the Office of the Dean of Activities.

WOMEN'S ASSOCIATION OF ALLIED BEVERAGE INDUSTRIES, INC. A $250 scholarship to an upper division woman, resident of San Diego City or County. It will be awarded on basis of scholarship and need of student.

SCHOLARSHIPS AND AWARDS FOR WHICH RECIPIENTS ARE CHOSEN BY DONORS OR PRIVATE COMMITTEES

An application form should be secured from the place designated in the scholarship description. Additional information may be secured from the Office of the Dean of Activities.

SCHOLARSHIPS AVAILABLE TO FRESHMEN

Alpha Kappa Alpha
American Association of University Women (Coronado)
American Legion Auxiliary
Blue Key
Convair Management Club
Kappa Alpha Psi
Kiwanis Club of San Diego
La Mesa Junior Woman's Club
La Mesa Woman's Club
Rotary Clubs
Sears Roebuck Foundation
Ann Downie Scott, Walker Scott Co.
DeWitt Bisbee Williams
Union-Tribune Charities

BUSINESS ADMINISTRATION

HASKINS AND SELLS FOUNDATION. $500 annual award given to a junior who is an outstanding student majoring in accounting. Nominations are made by the faculty of the Department of Accounting.

PALMER AND URNER PROFESSIONAL ACCOUNTING AWARD. $100 awarded each spring to an outstanding graduating senior with a major in accounting. Nominations are made by the faculty of the Department of Accounting.

SAN DIEGO FEDERAL SAVINGS AND LOAN ASSOCIATION. $250 will be given annually to a student recommended by the football coach. The student must be interested in business administration or related courses. He must be regularly enrolled, maintain a specified standard of scholarship and be a resident of San Diego City or County.

SAN DIEGO RETAIL GROCERS ASSOCIATION. $520 scholarship to sophomore or beginning junior who is majoring in marketing. Final selection of candidate to be made by San Diego Retail Grocers Association. Secure application form from Office of the Dean of Activities.

EDUCATION

ANONYMOUS "E." A $50 scholarship awarded each semester to male student majoring in education.

MERCHANDISING

THE MARSTON COMPANY SCHOLARSHIP. Awarded annually, $75 a semester, to student attending San Diego State College interested in a retailing future in San Diego. Award is based on above average academic scholarship, interest in working part time at The Marston Company while attending college. Student must be enrolled in full time program and in some marketing department courses, although he need not be a marketing major.

MUSIC

SIGMA ALPHA IOTA, San Diego State College Chapter. $25 a semester will be given to a student majoring in music. Must be a student who is not a member of this organization. Group will make final selection. Secure application from Office of the Dean of Activities.

NURSING

AMERICAN LEGION AUXILIARY. Scholarships of various amounts given to students in Nursing. Apply to American Legion in your region.

UNION-TRIBUNE CHARITIES. Two $150 scholarships to students in Nursing program. Applications made to the San Diego County Medical Auxiliary.

WIVES OF NAVY DOCTORS. Two $75 scholarships awarded to women students in nursing. Applications should be made to Nursing Department, San Diego State College.

WOMAN'S AUXILIARY SAN DIEGO COUNTY MEDICAL SOCIETY. Scholarships of $150 awarded annually to students in nursing. Applications made to Nursing Department, San Diego State College.

PREPROFESSIONAL CURRICULA

ANONYMOUS "E." $100 award made to a male student in premedical program. Applications made to the Faculty Scholarships Committee.

WOMAN'S AUXILIARY OF SAN DIEGO DENTAL SOCIETY. An annual award of $300 made in June to an outstanding male student in predentistry and $150 to a young woman preparing to become a dental hygienist. Apply directly to donor.

WOMAN'S AUXILIARY TO THE SAN DIEGO COUNTY OPTOMETRIC SOCIETY. One $50 scholarship to a sophomore preoptometric student who has a 2.5 grade point average or better, is in financial need, and has qualities of character indicating high moral integrity. Apply directly to donor.

OSTEOPATHY AUXILIARY—SAN DIEGO COUNTY. An annual award of $100 to a student who has graduated from the San Diego State College and has been accepted for enrollment in the College of Osteopathy in Los Angeles. Apply directly to donor.

PSYCHOLOGY

SAN DIEGO HUMAN ENGINEERING SOCIETY. $50 annual scholarship to psychology major in area of experimental or engineering psychology; graduate student. Final selection of the recipient is made by the San Diego Human Engineering Society.

GENERAL

(Scholarships and awards for which no specified major is required.)

ALPHA GAMMA DELTA. An annual $50 award to the student in Alpha Gamma Delta sorority with the highest grade point average.

AMERICAN ASSOCIATION OF UNIVERSITY WOMEN—EL CAJON VALLEY BRANCH. An annual scholarship of $50 presented to a young woman entering San Diego State College. Apply directly to donor.

ARNOLD AIR SOCIETY SCHOLARSHIP. $50 awarded annually to any Air Science III student who is offered and accepts a contract in the semester in which the scholarship is offered. Qualifications: 1. Must be in top 20 percent of air science class; 2. Must have displayed outstanding leadership ability in the air program; 3. Must have desire to participate in the flight training program of Air Force; 4. Must have overall scholarship equal to or above all men's average.

BLUE KEY. A scholarship of $50 is given annually to a lower division male student preferably from San Diego County. Secure application forms from the Office of the Dean of Activities.

CONVAIR—A DIVISION OF GENERAL DYNAMICS CORPORATION. Nine scholarships each year for students from the fields of accounting, chemistry, engineering, mathematics, physics, business, personnel and industrial management. Each scholarship will provide $75 a semester for each semester in college as long as the student maintains a standard of superior academic performance. Freshmen, sophomores and juniors are eligible. Apply directly to donor.

CONVAIR MANAGEMENT CLUB. Three awards offered to seniors graduating from high school, who are sons or daughters of Convair employees. These scholarships are available only to San Diego County high school graduates. For applications, consult your senior counselor in high school.

DANCE CLUB OF SAN DIEGO STATE COLLEGE. A $50 scholarship awarded to an outstanding dancer from the club to be used for tuition at a recognized summer school of the dance. Application should be made to the Women's Physical Education Department, San Diego State College.

DELTA DELTA DELTA ALUMNAE. $50 a semester is to be awarded to a single woman student having a B average. She must have been admitted to the teacher education curriculum and have good recommendations.

DRESSER, ELIZABETH. A $100 scholarship given annually to a member of the Christian Science Organization at San Diego State College, who is also a member of The Mother Church, The First Church of Christ, Scientist, in Boston. Must be an education major.

KAPPA ALPHA PSI FRATERNITY—SAN DIEGO ALUMNI. An annual $50 scholarship ($25 per semester) awarded to a student graduating from high school for fees at San Diego State College. Apply directly to donor.

KAPPA ALPHA THETA MOTHERS CLUB. A scholarship of $50 awarded annually to the member in the local chapter who has made the highest grade point average for the school year.

KIWANIS CLUB, SAN DIEGO. Two $100 scholarships given annually to a male student graduate of San Diego High School and a male student graduate of Lincoln High School in San Diego County. For applications, consult your senior counselor in high school.

KIWANIS CLUBS. Many students have secured scholarships from Kiwanis Clubs in their communities. Apply directly to Kiwanis Club in your city.

LA MESA WOMAN'S CLUB—EVENING DIVISION. Scholarships awarded annually to seniors graduating from Grossmont and Helix High Schools who are entering San Diego State College. Apply directly to donor.

LA MESA JUNIOR WOMAN'S CLUB. Two $100 awards made to graduates of Grossmont and Helix high schools. Apply directly to donor.

LIONS CLUBS. Scholarships of varying amounts have been given students. Applications should be made to the Lions Club in your vicinity.

MARCY, MAY FINNEY. $50 scholarships awarded to women students in upper division. Awards are made upon recommendation of the Faculty Committee on Scholarships to Mrs. F. E. Marcy and a committee of members of Cap and Gown on San Diego State College campus.

PANHELLENIC OF SAN DIEGO STATE COLLEGE. $50 given biannually to the sorority member who has made the highest grade point average in the semester previous to the making of the award.

P.E.O. SCHOLARSHIPS. Various chapters of this organization assist worthy students in amounts ranging from $15 a month to $250 a semester. Apply directly to donor.

PRESBYTERIAN WESTMINSTER FOUNDATION. A scholarship of $50 awarded each year at the end of the spring semester to a student of any religious faith enrolled at San Diego State College on the basis of contribution of time and energy to campus religious ideals and activities, and liaison with nonreligious groups, stimulating them to religious thought and activities. This scholarship is made available by the Presbyterian Westminster Foundation Committee of the San Diego area.

PSI CHI. $50 awarded annually to a student with overall average of 2.5; must have completed six units in psychology at San Diego State College with a 3.5 grade average; must submit a one-page paper telling of interest in psychology. Applicants do not have to be psychology majors.

ROTARY INTERNATIONAL CLUB. Scholarships of various amounts have been awarded students by El Cajon, Escondido, Old Mission, San Diego, Oceanside, and Vista Rotary Clubs. Apply directly to donor.

SAN DIEGO CITY PANHELLENIC. $100 scholarship awarded annually to an upper division woman student.

SAN DIEGO INSURANCE ADJUSTERS SCHOLARSHIPS FUND. This award does not become available until 1962. It is established for the higher education of one student chosen by the above association each year from the ranks of the Junior Patrol boys from the schools of the City of San Diego. This award is for $100 per year for a four-year period.

DAVID AND ANNA SILVERMAN. The interest from a fund of $5,000 awarded annually, preferably to a man interested in a career in medicine or teaching. Final selection will be made by a three-member board of trustees empowered to invest the sum.

ANN DOWNIE SCOTT SCHOLARSHIP. Awarded by the Scott Foundation to sons and daughters of employees of Walker Scott Company for tuition and books. Applications should be made to the Personnel Office of Walker Scott Company.

STEINMAN INTERFAITH AWARD. $50 awarded annually to a student at San Diego State who has promoted interfaith co-operation on the campus. Selection of the student is made by three faculty members who have served as advisers to the Interfaith Council. The award is contributed by Mr. Lou Steinman, member of the Henry Weinberger Lodge, B'nai B'rith, and by Mrs. Steinman.

WEINBERGER, HENRY, MEMORIAL INTERFAITH AWARD. $100 awarded annually to a student at San Diego State who has promoted interfaith co-operation on the campus. Selection of the student is made by three faculty members who have served as advisers to the Interfaith Council. The award is contributed by Mrs. Rose Weinberger, widow of the late Henry Weinberger, past president of the Henry Weinberger Lodge, B'nai B'rith, and by his daughters, Mrs. Ted Rosenfeld and Mrs. Harry Epsten.

DEWITT BISBEE WILLIAMS MEMORIAL. One $100 scholarship is made available to each secondary school in San Diego County having a chapter of the California Scholarship Federation. Selection is made by the high school faculty from students who have been members of CSF for at least two semesters and have qualifications for admission to San Diego State.

WOMEN'S ASSOCIATION OF ALLIED BEVERAGE INDUSTRIES, INC.—San Diego Chapter. $250 scholarship, woman student, upper division, resident San Diego City or County. Apply at the Office of the Dean of Activities, San Diego State College. Final selection by donor.

SCHOLARSHIPS AVAILABLE TO GRADUATE STUDENTS

AMERICAN ASSOCIATION OF UNIVERSITY WOMEN. One scholarship of $100 given each year in June to a graduating senior woman who will begin work in an accredited college or university toward a higher degree or credential. The scholarship is made available by the San Diego Branch of the American Association of University Women. Interviews with representatives of that organization are arranged.

CALIFORNIA CONGRESS OF PARENTS AND TEACHERS, INC. Two Secondary Teacher Education Scholarships of $400 each to be granted only to fifth year students training to teach in the public secondary schools of California on a general secondary credential. These may be divided into $200 awards if, in the judgment of the Scholarships Committee, this would be a wise procedure.

INSTITUTE ON GOVERNMENT SAN DIEGO COUNTY. A $200 scholarship awarded a graduate student enrolled full time, candidate for M.S. degree in public administration. Selection by Political Science Department.

SOROPTIMIST INTERNATIONAL OF SAN DIEGO. A $200 scholarship to a senior or graduate woman student regularly enrolled in the division of Physical Sciences with preference being given to a student enrolled in engineering, chemistry, or physics. In selecting the student, particular weight will be given to leadership qualities, scholastic ability and attainment.

STOTT, DOROTHY CRANSTON. A scholarship of $100 awarded each June to a student who has attended the San Diego State College for at least two years and who is being graduated or has been graduated from the San Diego State College with a major in English. The recipient must continue work in the San Diego State College or in any other accredited college or university, towards a higher degree or credential. The selection is made by the Department of English with approval by the Committee on Scholarships.

STOTT, K. W. A scholarship of $100 awarded each June to a student who has attended the San Diego State College for at least two years and who is being graduated or has been graduated by the San Diego State College with a major in history.

DIRECTORY

1958-59

LOVE, MALCOLM A. (1952) .... President
A.B., Simpson College; M.A., Ph.D., University of Iowa; LL.D., Simpson College.

ACKLEY, JOHN W. (1947) .... Professor of Speech Arts
A.B., University of Redlands; M.A., Ph.D., University of Southern California.

ADAMS, EILEEN (Mrs. Bert) (1949) .... Librarian II
A.B., Willamette University; B.S. in L.S., University of Denver.

ADAMS, JOHN R. (1928) .... Chairman, Division of Humanities; Professor of English
A.B., A.M., University of Michigan; Ph.D., University of Southern California.

ADAMS, WILLIAM J. (1955) .... Assistant Professor of Speech Arts
B.S., McMurray College; M.A., Northwestern University; Ph.D., Stanford University.

ALCORN, MARVIN D. (1941) .... Professor of Education
A.B., Southwestern College; A.M., Teachers College, Columbia University; Ed.D., University of Southern California.

ALDRICH, GARY A. (1958) .... Instructor in Mathematics
B.A., M.A., University of California.

ANDERSON, C. DARSIE (1957) .... Assistant Professor of Education
B.A., Pomona College; M.A., Claremont College; Ed.D., Stanford University.

ANDERSON, EVANS L. (1954) .... Assistant Professor of Education
B.A., Gustavus Adolphus College; M.A., University of Minnesota; Ed.D., University of Denver.

ANDERSON, GRAYDON K. (1949) .... Professor of Economics
A.B., Willamette University; Ph.D., University of Wisconsin.

ANDERSON, KEITH P. (1956) .... Librarian II
B.A., Pomona College; M.A. and additional graduate study, Claremont Graduate School; M.S. in L.S., University of Southern California.

ANDERSON, MELVIN A. (1956) .... Dean of Admissions and Records; Assistant Professor of Education
B.Ed., Northern Illinois State College; M.A., Northwestern University; Ed.D., University of California at Los Angeles.

ANDERSON, PAUL S. (1955) .... Associate Professor of Education
A.B., Colorado State College; M.S., Ph.D., University of Wisconsin.

ANDERSON, PAUL V. (1954) .... Assistant Professor of Music
B.M., North Texas State College; M.M., University of Wisconsin.

ANDERSON, W. CARLISLE (1955) .... Assistant Professor of Industrial Arts
B.S., Nebraska State Teachers College; M.A., Ph.D., University of Minnesota.

APPLE, JOE A. (1947) .... Professor of Education
A.B., Southeastern State College; M.A., University of Oklahoma; Ed.D., Teachers College, Columbia University.

ARCHER, ELLIS C. (1956) .... Assistant Professor of Business Education
B.S., Northwestern State College; M.S., University of Kansas; Ed.D., Stanford University.

ATKINSON, BEATRICE (1954) .... Assistant Professor of Nursing
B.S., College of St. Scholastica.

BABILOT, GEORGE (1956) .... Assistant Professor of Economics
A. B., Hastings College; M.A., University of Nebraska; Ph.D., University of Oregon.

BACON, GUINIVERE KOTTER (Mrs. George) (1928) .... Associate Professor of Education
B.S., Utah Agricultural College; M.A., Stanford University; additional graduate study.

BAKER, CLIFFORD H., JR. (1937) .... Assistant Professor of Spanish
A.B., San Diego State College; M.A., and additional graduate study at the University of California.

BAKER, DOUGLAS L. (1954) .... Associate Professor of Education
A.B., Lynchburg College; M.S., Ed.D., University of Southern California.

BAKER, JAMES R. (1956) .... Assistant Professor of English
B.A., M.A., Ph.D., University of Denver.

BALLANTINE, FRANCIS A. (1949) .... Professor of Education
A.B., Michigan State Normal College; A.M., Ph.D., University of Michigan.

BARCKLEY, ROBERT E. (1955) .... Assistant Professor of Economics
B.S., University of North Dakota; M.A., Columbia University; Ph.D., University of Illinois.

BARHAM, ERIC G. (1956) .... Assistant Professor of Zoology
B.A., San Diego State College; Ph.D., Stanford University.

BARNHART, KENNETH EDWIN (1939) .... Professor of Sociology
A.B., Southwestern University; B.D., Southern Methodist University; Ph.D., University of Chicago.

BARRONS, JOHN C. (1957) .... Instructor in Business Education
B.A., Pennsylvania State University; M.Ed., University of California at Los Angeles.

BAUER, EDWARD G. (1956) .... Assistant Professor of Engineering
B.S., U. S Naval Academy; M.S., University of California.

BECKER, CALLIE D. (Mrs. E. J.) (1946) .... Assistant Librarian
A.B., Shorter College; A.B. in L.S., Emory University.

BECKER, GERALD A. (1958) .... Assistant Professor of Mathematics
B.A., M.S., and additional graduate study, University of Iowa.

BELCHER, DAVID W. (1957) .... Professor of Management
B.B.A., M.A., Ph.D., University of Minnesota.

BELL, CHARLES B., JR. (1958) .... Assistant Professor of Mathematics
B.S, Xavier University; M.S., Ph.D., University of Notre Dame.

BENJAMIN, ROBERT L. (1953) .... Associate Professor of Speech Arts
A.B., M.S., University of California; Ph.D., University of Wisconsin.

BENTON, CARL W. (1948) .... Associate Professor of Physical Education
B.S., University of California at Los Angeles; M.S., University of Southern California.

BIGELOW, MARYBELLE S. (Mrs. K. G.) (1956) .... Assistant Professor of Art
A.B., M.A., University of California at Los Angeles.

BIGGER, WILLIAM R. (1952) .... Associate Professor of Political Science
B.A., M.A., University of Wisconsin; Ph.D., University of California at Los Angeles.

BIGGS, MILLARD R. (1958) .... Assistant Professor of Music
B.M., Youngstown University; M.F.A., Ohio University; additional graduate study at the University of Iowa.

BILTERMAN HENRY L. (1956) .... Instructor in Engineering
B.S., University of Iowa; graduate study at San Diego State College.

BIRCH, AILEEN J. (Mrs. C. E.) (1949) .... Assistant Professor of Education
A.B., M.A., San Diego State College.

BLOCK, EDWARD A. (1946) .... Professor of English
A.B., M.A., Ph.D., University of California.

BLYTH, JOHN D. (1957) .... Assistant Professor of Music
B.M., M.M., Illinois Wesleyan University; additional graduate study at Teachers College, Columbia University, and the University of Nebraska.

BOCK, WALTER F. (1957) .... Assistant Professor of Art
A.B., M.A., University of California; additional graduate study at Pennsylvania State University.

BOHNSACK, KURT K. (1956) .... Assistant Professor of Zoology
B.S., Ohio University; M.S., Ph.D., University of Michigan.

BONE, BERT A. (1957) .... Assistant Professor of Mathematics
B.S.C.E., University of California; graduate study at San Diego State College.

BRANDT, CHARLES L. (1957) .... Assistant Professor of Zoology
B.A., Ph.D., Stanford University.

BRANSTETTER, R. DEANE (1955) .... Associate Professor of Mathematics
B.S., B.A., Northeast Missouri State Teachers College; M.S., State University of Iowa; Ph.D., Iowa State College.

BRIDENSTINE, DON C. (1956) .... Assistant Professor of Economics
B.S., University of Oregon; A.M., Ph.D., University of Southern California.

BRIGGS, ROBERT M. (1957) .... Assistant Professor of Education
A.B., Colorado State College of Education; M.A., Stanford University; Ed.D., Colorado State College of Education.

BROADBENT, HARRY H. (1949) .... Associate Professor of Physical Education
A.B., University of Oklahoma; M.S., University of Pennsylvania.

BRODSHATZER, ARTHUR (1956) .... Assistant Professor of Accounting
B.B.A., City College of New York; M.B.A., New York University. Certified Public Accountant.

BROOKS, BAYLOR (1931) .... Associate Professor of Geology
B.A., Stanford University; additional graduate study at University of Arizona and Stanford University.

BROOKSHIRE, MARJORIE S. (1954) .... Assistant Professor of Economics
B.A., M.A., Ph.D., University of Texas.

BROWN, ELIZABETH McPIKE (Mrs. L. P.) (1926) .... Professor of French
Ph.B., M.A., Ph.D., University of Chicago; additional graduate study at the Sorbonne, Paris, France; Certificat d'Etudes Francaises; Diplôme de l'Association Générale de Phonétique, Paris, France; Officier d'Académie.

BROWN, EUGENE P. (1947) .... Professor of Accounting
B.S., Southeastern Teachers College; B.A., M.A., University of Oklahoma; additional graduate study at University of Chicago, University of Southern California, University of Mexico, and University of Vermont. Public Accountant.

BROWN, LESLIE PARKER (1922) .... Professor of Spanish and French
B.A., Yale College; M.A., Harvard University; Ph.D., University of Southern California.

BRUCE, PAUL (1957) .... Assistant Professor of Education
A.B., Antioch College; M.A., Claremont Graduate School; Ph.D., State University of Iowa.

BRYDEGAARD, MARGUERITE A. (Mrs. H.) (1936) .... Associate Professor of Education
A.B., San Diego State College; M.A., Ph.D., Claremont Graduate School.

BURNETT, GAIL A. (1947, except 1951-52)............Professor of English
A.B., Randolph-Macon Woman's College; M.A., University of California at Los Angeles; Ph.D., University of Southern California.

CAMERON, ROY ERNEST (1929)............Professor of Economics
A.B., Ph.D., University of California.

CAMPBELL, LOIS B. (1947)............Associate Professor of Education
A.B., University of California; M.A., Teachers College, Columbia University.

CAPP, MARTIN P. (1953)............Chairman, Division of Engineering; Professor of Engineering
B.S., M.S., University of Colorado. Registered Professional Engineer and Land Surveyor.

CAREY, CHARLOTTE C. (1956)............Assistant Professor of Education
B.S., Wisconsin State College; M.S., Ph.D., University of Wisconsin.

CARLSON, HILDING B. (1948)............Professor of Psychology
Ph.B., M.S., Ph.D., University of Chicago.

CARLSON, THORSTEN R. (1948)............Professor of Education
B.E., St. Cloud State Teachers College; M.A., Ph.D., University of Minnesota.

CARMICHAEL, A. MAX (1956)............Visiting Professor of Education
B.A., University of Iowa; M.A., Teachers College, Columbia University; Ph.D., University of Iowa.

CASTETTER, ROBERT K. (1954)............Associate Professor of Management
B.A., Washington and Jefferson College; LL.B., Salmon P. Chase College of Law; LL.M., Indiana University.

CAVE, MARY F. (1946)............Assistant Professor of Physical Education
B.S., University of North Dakota; M.A., San Diego State College.

CHADWICK, LEONARD E. (1949)............Assistant Professor of Economics
B.S. and additional graduate study at the University of California.

CHAPMAN, JAMES L. (1957)............Assistant Professor of Management
B.S., J.D., Northwestern University.

CLARK, HELEN S. (Mrs. J. G.) (1952)............Assistant Professor of Mathematics
B.A., Macalester College.

COLEMAN, FRANCIS F. (1958)............Assistant Professor of Physics
B.A., Reed College; M.A., University of California; Ph.D., Oxford University.

COMIN, NORITA N. (1949)............Associate Professor of Home Economics
B.S., University of Minnesota.

COVENY, CECELIA T. (1957)............Assistant Professor of Nursing
B.S., University of Minnesota; M.P.H., University of North Carolina.

CRAWFORD, MAURICE L. (1954)............Associate Professor of Business Education
B.S., M.S., University of Utah; additional graduate study at University of California at Los Angeles.

CRAWFORD, RONALD W. (1953)............Associate Professor of Zoology
A.B., San Diego State College; Ph.D., Cornell University.

CROUCH, JAMES ENSIGN (1932)............Professor of Zoology
B.S., M.S., Cornell University; Ph.D., University of Southern California.

CROW, WAYMAN J. (1957)............Assistant Professor of Psychology
B.A., M.A., Ph.D., University of Colorado.

CRUM, CLYDE E. (1955)............Assistant Professor of Education
B.S., M.S., Kansas State Teachers College; Ed.D., University of Colorado.

CUNKLE, ELIZABETH C. (Mrs. L.) (1948)............Librarian III
A.B., University of California; B.S. in L.S., Columbia University. Graduate study, University of California.

DANIEL, LARK O., III (1955)............Assistant Professor of Psychology
B.A., M.A., Southern Methodist University; Ph.D., Purdue University.

DANIELS, MORRIS J. (1956)............Assistant Professor of Sociology
B.A., Southern Methodist University; M.A., Ph.D., University of Texas.

DeLORA, JACK R. (1955)............Assistant Professor of Sociology
B.S., Bowling Green State University; M.A., Western Reserve University; additional graduate study at Michigan State College.

DIRKS, JOHN H. (1947)............Assistant Professor of Art
A.B., San Diego State College. Graduate study at University of Southern California.

DODDS, LOWELL J. (1957)............Assistant Professor of Accounting
A.B., University of Redlands; M.B.A., University of Denver. Certified Public Accountant.

DOOLITTLE, ROBERT F., II (1958)............Assistant Professor of Physics
A.B., Oberlin College; M.S., Ph.D., University of Michigan.

DORRIS, HELEN L. (1952)............Associate Professor of Home Economics
B.S., Southern Illinois University; M.S., University of Illinois.

EAGLE, JOHN E. (1946)............Professor of Mathematics
B.S., Montana State College; M.A., Ed.D., Stanford University.

EARNEST, SUE W. (Mrs. L. E.) (1947)............Professor of Speech Arts
A.B., San Diego State College; M.A., Ph.D., University of Southern California.

EIDEMILLER, DONALD I. (1956)............Assistant Professor of Geography
B.A., San Diego State College; M.A., University of California; Ph.D., Indiana University.

EMERSON, ARTHUR T. (1952)...Assistant Professor of Mathematics
B.S., U. S. Naval Academy; additional graduate study at Naval War College.

EZELL, PAUL H. (1956)...Assistant Professor of Anthropology
B.A., M.A., Ph.D., University of Arizona.

FALK, CHARLES J. (1957)...Assistant Professor of Education
S.T.B., S.T.L., S.T.D., Urban University, Rome, Italy; additional graduate study at Claremont Graduate School.

FELLERS, DANIEL I. (1956)...Assistant Professor of Accounting
B.S., M.B.A., University of Denver; additional graduate study at Louisiana State University.

FERREL, DALE B. (1957)...Assistant Professor of Accounting
B.S., M.B.A., University of Denver. Certified Public Accountant.

FINNEY, FRANK B. (1957)...Assistant Professor of Engineering
B.S., San Diego State College; M.S., Stanford University. Registered Civil Engineer.

FISHBURN, CLARENCE E. (1955)...Assistant Professor of Education
A.B., Arizona State College, Tempe; M.A., Arizona State College, Flagstaff; Ed.D., Stanford University.

FISHER, J. SHERRICK (1953)...Associate Professor of Education
B.S., Bethany College; M.A., Teachers College, Columbia University; Ph.D., University of Pittsburgh.

FLAGG, DENIS A. (1955)...Assistant Professor of Economics
B.A., Harvard College; Ph.D., University of California.

FLYE, RICHARD C. (1950)...Assistant Professor of Music
B.A., University of Virginia; M.A., and Professional Diploma, Columbia University.

FORD, ARTHUR B. (1958)...Assistant Professor of Geology
B.S., M.S., University of Washington.

FORD, WALTER B. (1953)...Assistant Professor of Industrial Arts
B.E., Santa Barbara State College; graduate study at Claremont Graduate School.

FOSTER, CLIFFORD D. (1955)...Assistant Professor of Education
B.S., Northeast Missouri State Teachers College; M.A., Ph.D., University of Washington.

FREY, LEONARD H. (1956)...Assistant Professor of English
A.B., Dartmouth College; M.A. and additional graduate study at the University of Oregon.

FRIEDRICH, KURT (1949)...Professor of Education
A.B., Columbia College; M.A., Columbia University; Ed.D., Columbia Teachers College.

FULKERSON, E. GLEN (1954)...Associate Professor of Education
B.E., Southern Illinois University; M.A., Ed.D., University of California at Los Angeles.

GALBRAITH, OLIVER, III (1955)...Assistant Professor of Management
B.S., M.B.A., Northwestern University; additional graduate study at University of California at Los Angeles.

GALLUP, AVERY H. (1952)...Associate Professor of Botany
A.B., San Diego State College; M.A., Claremont Graduate School; Ph.D., University of Michigan.

GANONG, CONSTANCE L. (1954)...Assistant Professor of Nursing
B.S., University of Minnesota.

GARRETT, WILLIS C., JR. (1958)...Instructor in Physics
A.B. and graduate study, San Diego State College.

GARRISON, JOHN D. (1956)...Assistant Professor of Physics
B.A., M.A., University of California at Los Angeles; Ph.D., University of California.

GATES, GERALD F. (1955)...Assistant Professor of Education
B.F.A., Syracuse University; M.F.A., University of Colorado; M.A., Ed.D., University of Denver.

GEER, OWEN C. (1958)...Assistant Professor of Education
B.A., M.A., University of Redlands; Ed.D., Stanford University.

GEGA, PETER C. (1955)...Assistant Professor of Education
A.B., M.S., Ed.D., University of Southern California.

GEITGEY, DORIS A. (1957)...Assistant Professor of Nursing
B.A., University of Toledo; R.N., Los Angeles County Hospital School of Nursing; M.S., Immaculate Heart College, Los Angeles.

GELDREICH, EDWARD W. (1947)...Professor of Psychology
A.B., M.A., University of Cincinnati; Ph.D., University of Chicago.

GENERALES, MINOS D. (1949)...Professor of Political Science
Degree in Law and Political Science, University of Athens; additional graduate study at the University of Paris Law School and Institute of International Studies, Paris and Geneva.

GENZLINGER, CLEVE K. (1957)...Assistant Professor of Music
B.M., M.M., University of Nebraska; additional graduate study at Teachers College, Columbia University.

GERLACH, LEE F. (1956)...Assistant Professor of English
A.B., M.A., University of Wisconsin; Ph.D., University of Michigan.

GIBSON, ERNEST DANA (1947)...Professor of Business Education
B.S., University of Minnesota; M.A., Colorado State College of Education; Ed.D., New York University.

GIFFORD, ADAM (1954)...Assistant Professor of Economics
B.A., Portland University; M.A., Stanford University; Ph.D., University of Washington.

GILBERT, MARGARET L. (Mrs. A. V.) (1958)........Registrar
A.B., San Diego State College.

GJERDE, CLAYTON M. (1948)........Professor of Education
A.B., Augsburg College; M.A., Ph.D., University of Minnesota.

GONZALEZ, ALFONSO (1957)........Instructor in Geography
A.B., Clark University; M.A., Northwestern University; additional graduate study at the University of Texas.

GOVERNALI, PAUL (1956)........Professor of Physical Education
B.A., Columbia College; M.A., Ed.D., Teachers College, Columbia University.

GRAWUNDER, RALPH M. (1955)........Assistant Professor of Physical Education
B.S., The Rice Institute; M.A., Ed.D., Teachers College, Columbia University.

GRAY, ROBERT T. (1956)........Dean of Counseling and Testing
A.B., M.Ed., Ed.D., University of Kansas.

GREENE, JOANNE H. (1958)........Librarian I
B.A., Cornell University; M.S. in L.S., University of Southern California.

GRIPP, RICHARD C. (1958)........Assistant Professor of Political Science
A.B., Whittier College; A.M., Ph.D., University of Southern California.

GRISIER, DONALD W. (1951)........Associate Professor of Education
B.S., Bowling Green State University; M.A., Ed.D., Teachers College, Columbia University.

GROFF, PATRICK J. (1955)........Assistant Professor of Education
B.S., M.S., University of Oregon; Ed.D., University of California.

GROTKE, EARL M. (1958)........Assistant Professor of Education
B.Ed., Illinois State Normal; M.Ph., Ph.D., University of Wisconsin.

GUIDAL, RONALD A. (1958)........Instructor in Mathematics
Sc.B., Brown University; M.S., University of California at Los Angeles.

GULICK, SIDNEY L. (1945)........Dean of Arts and Science; Professor of English
B.A., M.A., Oberlin College; Ph.D., Yale University.

HALE, E. ALAN (1957)........Assistant Professor of Marketing
B.A., Gustavus Adolphus College; M.A., Ph.D., University of Illinois.

HANCHETT, WILLIAM F., JR. (1956)........Assistant Professor of History
A.B., Southern Methodist University; M.A., Ph.D., University of California.

HARRINGTON, AWONA W. (1949)........Librarian II
A.B. and additional graduate study at San Diego State College; M.S. in L.S., University of Southern California.

HARRINGTON, NEIL J. (1948)........Assistant Professor of Chemistry
B.S., Monmouth College; additional graduate study at DePaul University and Northwestern University.

HARRIS, VINCENT C. (1950)........Professor of Mathematics
B.A., M.A., Ph.D., Northwestern University.

HARRISON, ROBERT C. (1953)........Associate Professor of Psychology
B.S., M.S., Ph.D., University of Washington.

HARTIGAN, SELWYN C. (1946)........Business Manager
A.B., San Diego State College.

HARVEY, A. R. (1949)........Professor of Mathematics
B.S., Bates College; A.M., Ph.D., Harvard University.

* HARVEY, DOROTHY R. (Mrs. F. A.) (1924)........Assistant Professor of Botany
A.B., San Diego State College; M.A., University of Southern California. Additional graduate study at University of Southern California and University of Chicago.

HARWOOD, ROBERT D. (1928)........Chairman, Division of Life Sciences; Professor of Zoology
A.B., Pomona College; Ph.D., Cornell University.

HASKELL, HARRIET (1940, except 1943-45)........Professor of English
A.B., Mills College; M.A., Bryn Mawr College; Ph.D., University of Wisconsin.

HAYNES, GERALDINE K. (Mrs. L.) (1931)........Supervising Librarian, Technical Processes
A.B., Indiana Central College; B.S. in L.S., University of Illinois.

HELLBERG, LARS H. (1956)........Assistant Professor of Chemistry
B.S., Northwestern University; Ph.D., University of California at Los Angeles.

HESS, EDWARD J. (1957)........Librarian II
B.A., Nebraska State Teachers College; M.A., M.S., University of Southern California.

HILL, WAYNE O. (1955)........Assistant Professor of Education
B.A., M.Ed., Eastern Washington College of Education; Ed.D., Stanford University.

HIPPAKA, WILLIAM H. (1957)........Assistant Professor of Management
B.S.C., Jur.D., State University of Iowa.

HODGE, GLENN L. (1953)........Associate Professor of Management
B.S., Kansas State Teachers College; M.S., University of Denver; Ph.D., Louisiana State University.

HOLMES, CALVIN V. (1956)........Assistant Professor of Mathematics
B.A., M.A., University of Mississippi; M.S., University of Illinois; Ph.D., University of Kansas.

HOLMES, DARRELL (1952)........Executive Dean; Associate Professor of Education
B.A., M.A., Ph.D., Ohio State University.

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* On leave Semester I.

HOOVER, GRACE V. (1956) .... Librarian II
A.B., University of Nebraska; B.S. in L.S., University of Denver.

* HOUSEMAN, RICHARD A. (1948) .... Professor of Education
B.S., Central Michigan College of Education; M.A., Ed.D., Teachers College, Columbia University.

† HOUSER, LOWELL (1938) .... Associate Professor of Art
Diploma, Chicago Art Institute. Additional special study in Mexico, Yucatan, Haiti, and New York City.

HUFFMAN, EDWARD W. (1955) .... Assistant Professor of Zoology
B.S., M.S., University of Illinois; Ph.D., Ohio State University.

HUNRICHS, WILLIAM A. (1957) .... Assistant Professor of Psychology
B.A., M.A., Ph.D., Stanford University.

HUNTER, JAMES J., JR. (1946) .... Professor of Education
A.B., Cornell University; M.S., Ph.D., Syracuse University.

HURD, LYMAN C., III (1958) .... Assistant Professor of Music
A.B., M.M., Syracuse University.

IRGANG, FRANK J. (1956) .... Assistant Professor of Industrial Arts
B.S., Central Michigan College; M.A., Ph.D., University of Michigan.

ISENSEE, ROBERT W. (1948) .... Professor of Chemistry
A.B., Reed College; M.A., Ph.D., Oregon State College.

JACKSON, EVERETT GEE (1930) .... Professor of Art
A.B., San Diego State College; M.A., University of Southern California; additional special study in Mexico.

JACOBSEN, HELEN M. (1946) .... Librarian III
A.B., San Diego State College; B.S. in L.S., University of California.

JAMESON, DAVID L. (1957) .... Assistant Professor of Zoology
B.S., Southern Methodist University; M.A., Ph.D., University of Texas.

JANSSEN, HENRY L. (1953) .... Associate Professor of Political Science
B.A., M.A., University of Oklahoma; Ph.D., University of California.

JAROLIMEK, JOHN (1956) .... Assistant Professor of Education
B.S., River Falls State Teachers College; M.A., Ph.D., University of Minnesota.

JENSEN, REILLY C. (1958) .... Assistant Professor of Chemistry
B.S., M.S., University of Nevada; Ph.D., University of Washington.

JOHNSON, ARVID T. (1957) .... Professor of History
B.A., Greenville College; M.A., and additional graduate study at the University of Michigan.

JOHNSON, DeWAYNE B. (1955) .... Assistant Professor of Journalism
A.B., University of California; Ed.D., University of California at Los Angeles.

JOHNSON, EULALIA G. (1956) .... Assistant Professor of Nursing
B.S., Mount St. Mary's College.

JOHNSON, FRANK LOUIS (1939) .... Professor of English
A.B., M.A., University of Minnesota; Ph.D., University of Wisconsin.

JOHNSON, PHILIP E. (1958) .... Assistant Professor of Engineering
B.S., University of Idaho; M.S., University of California.

JONES, C. CARROLL (1955) .... Physician and Surgeon
M.D., Loyola University.

JONES, KENNETH K., JR. (1948) .... Associate Professor of Speech Arts
B.S., Northwestern University; M.A., Stanford University.

JOSEPH, LIONEL (1947) .... Professor of Chemistry
B.S., St. Louis University; M.S., Ph.D., Washington University.

JOY, NED V. (1953) .... Associate Professor of Political Science
A.B., Ph.D., University of California.

JULIAN, JAMES L. (1951) .... Professor of Journalism
B.S., B.A., University of Houston; M.A., University of Texas; Ph.D., State University of Iowa.

KAPLAN, OSCAR J. (1946) .... Professor of Psychology
B.A., M.A., University of California at Los Angeles; Ph.D., University of California.

KARLSEN, BJORN (1954) .... Associate Professor of Education
B.A., State Teachers College, Oslo, Norway; B.S., M.A., University of Nebraska; Ph.D., University of Minnesota.

KASCH, FREDERICK W. (1948) .... Professor of Physical Education
B.S., M.S., University of Illinois; Ed.D., New York University.

KEENEY, JOSEPH SUMNER (1933) .... Professor of English
A.B., Yale University; M.A., Ph.D., University of California.

KEMP, BENNY B. (1954) .... Assistant Professor of Music
B.M., Eastman School of Music; M.M., University of Indiana.

KENNEDY, CHESTER B. (1937) .... Professor of English
A.B., Chico State College; M.A., Ph.D., Stanford University.

KIDWELL, WILLIAM M. (1949) .... Placement Officer; Associate Professor of Psychology
B.A., M.S., University of Oregon; Ed.D., Stanford University.

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* On leave Semester II.
† On leave 1958-59.

KILLION, JOHN J. (1955) Physician and Surgeon
B.A., University of Minnesota; M.D., University of Tennessee School of Medicine.

KINDER, JAMES S. (1953) Coordinator of Audio-visual Services; Associate Professor of Education
B.S., Southeast Missouri College; M.A., Ph.D., Teachers College, Columbia University.

KINNON, WILLIAM D. (1956) Assistant Professor of Psychology
B.S., Boston University; M.Ed., Trinity University; M.A., Ph.D., University of Denver.

KIRBY, BERNARD C. (1954) Associate Professor of Sociology
A.B., Denison University; M.A., Ph.D., University of Washington.

KITCHEN, JAMES D. (1957) Assistant Professor of Political Science
B.A., M.A., Ph.D., University of California at Los Angeles.

KITZINGER, ANGELA M. (1945) Professor of Health Education
A.B., Barnard College, Columbia; M.A., Teachers College, Columbia University; Ph.D., University of Southern California.

KLAPP, ORRIN E. (1948) Professor of Sociology
M.A., Ph.D., University of Chicago.

KLEMER, ELIZABETH J. (1953) Associate Professor of Education
B.E., National College of Education; M.A., George Peabody College; graduate study at Teachers College, Columbia University, and Stanford University.

KOEHN, EDNA B. (1958) Assistant Professor of Education
B.S., Moorhead State Teachers College; M.A., and additional graduate study at the University of Minnesota.

KOESTER, GEORGE A. (1950) Professor of Education
B.S., Midland College; M.A., University of Colorado; Ph.D., University of Minnesota.

KURTZ, RICHARD A. (1956) Assistant Professor of Sociology
B.S., Teachers College of Connecticut; M.A., University of Connecticut; Ph.D., Michigan State University.

KVARDA, BETTY B. (Mrs. R.) (1957) Instructor in Mathematics
B.A., B.S., Bowling Green State University; M.A., Ohio State University.

LAMBERT, JEAN A. (1958) Visiting Professor of French
Licence-ès-Lettres, Paris, France; Diplôme d'éstudes supérieures (Allemand), Institut francais, Berlin, Germany.

LAMDEN, CHARLES W. (1946) Chairman, Division of Business Administration; Professor of Accounting
A.B., M.A., University of California at Los Angeles; Ph.D., University of California. Certified Public Accountant.

LANDIS, VINCENT J. (1954) Assistant Professor of Chemistry
B.S., Washington State College; Ph.D., University of Minnesota.

LARSEN, KENNETH E. (1957) Assistant Professor of Management
B.A., M.A., State University of Iowa.

LAURITSEN, WILLIAM H. (1947) Professor of Health Education
A.B., M.A., University of Nebraska; Ph.D., Ohio State University.

LAWSON, DONALD F. (1956) Assistant Professor of Marketing
B.A., Occidental College; M.S., University of Colorado; additional graduate study at Ohio State University.

LAWSON, RICHARD H. (1957) Assistant Professor of Foreign Languages
B.A., M.A., University of Oregon; Ph.D., University of California at Los Angeles.

LEARY, GEORGE E. (1958) Librarian I
A.B., Colorado State College; M.A., University of Denver.

LeBARRON, EVANGELINE O. (Mrs. H. E.) (1946, except 1948-49) Associate Professor of Business Education
B.A., B.S., University of Iowa; B.A., Sioux Falls College; additional graduate study at Claremont Colleges, Universities of Southern California, Minnesota and Hawaii.

LEE, GORDON F. (1958) Publications and Public Relations Officer
A.B., Drew University; M.S., Columbia University.

LEE, ROBERT E. (1956) Assistant Professor of Speech Arts
B.A., M.A., University of Nebraska.

LEIFFER, DONALD B. (1948) Professor of Political Science
A.B., University of California at Los Angeles; M.A., Ph.D., Harvard University.

LEMME, MAURICE M. (1948) Dean of the Graduate Division; Professor of Mathematics
A.B., Oakland College; M.A., Indiana University; Ph.D., Purdue University.

LEUKEL, FRANCIS P. (1956) Assistant Professor of Psychology
B.S., University of Florida; M.S., Northwestern University; Ph.D., University of Washington.

LIENERT, CHARLES (1954) Assistant Professor of Education
B.E., Southern Illinois University; M.S., University of Illinois; Ed.D., Colorado State College of Education.

LINGREN, PAUL A. (1957) Instructor in Art
B.A., University of California, Santa Barbara College; M.A., University of California at Los Angeles.

LINLEY, JAMES M. (1945) Professor of Education
Ph.B., University of Chicago; M.S., Ph.D., University of Southern California.

* LOCKMAN, EVELYN (1948)........Associate Professor of Physical Education
B.A., Vanderbilt University; M.A., George Peabody College; graduate study at New York University, and University of Wisconsin; additional special study in dance.

LODGE, CHESTER R. (1954)........Associate Professor of Engineering
B.S., M.S., Ph.D., State University of Iowa.

LONGENECKER, MARTHA W. (Mrs. J. I.) (1955)........Assistant Professor of Art
B.A., University of California at Los Angeles; M.F.A., Claremont Graduate School.

LUCE, LAWRENCE W. (1949)........Associate Professor of Industrial Arts
B.S., Illinois Wesleyan University; M.S., Iowa State College; Ed.D., University of California at Los Angeles.

LYON, JAMES R. (1958)........Instructor in Engineering
B.S., Iowa State College.

MacCANNELL, EARLE H. (1957)........Assistant Professor of Sociology
B.A., B.S., M.A., Ph.D., University of Washington.

MADDEN, RICHARD (1939)........Professor of Education
A.B., Nebraska (Peru) State Teachers College; M.A., Ph.D., Columbia University.

MALCOLM, DAVID D. (1953)........Associate Professor of Education
A.B., Harvard College; Ed.M., Boston University; Ph.D., Northwestern University.

MALIK, JIM G. (1957)........Assistant Professor of Chemistry
A.B., Wabash College; Ph.D., Michigan State University.

MANN, RICHARD L. (1956)........Assistant Professor of Engineering
B.S., Ohio University; M.S., University of New Mexico.

MARCHAND, ERNEST L. (1946)........Professor of English
A.B., M.A., University of Washington; Ph.D., University of Wisconsin.

MARTIN, MARY F. (1958)........Assistant Professor of Home Economics
B.S., University of Idaho; M.S., Oregon State College.

MASECK, HARVEY E. (1958)........Assistant Professor of Engineering
B.M.E., M.Sc., Ohio State University.

McBLAIR, WILLIAM (1948)........Assistant Professor of Zoology
A.B., San Diego State College; Ph.D., University of California.

McCLINTIC, JOSEPH O. (1946)........Professor of Economics
A.B., Central College; A.M., University of Missouri; Ph.D., University of Wisconsin.

McCOLLOM, IVAN N. (1946)........Professor of Psychology
A.B., Central Washington College of Education; B.S., M.S., University of Oregon; Ed.D., Colorado State College of Education.

McLONEY, WIRT L. (1949)........Assistant Professor of Industrial Arts
A.B., Western State College; M.A., Colorado State College of Education; additional graduate study at University of Southern California.

McMULLEN, JAMES D. (1958)........Assistant Professor of Industrial Arts
B.S., M.S., Oregon State College; Ed.D., University of Southern California.

McVAY, BETTE B. (1957)........Assistant Professor of Education
B.S., Wisconsin State College; M.A., University of Minnesota.

MENDENHALL, MARY (1939)........Professor of Philosophy
B.A., University of Colorado; M.A., University of Southern California; Ph.D., Yale University.

MERRILL, JOHN E. (1946)........Associate Professor of History
A.B., Stanford University; A.M., Harvard University; Ph.D., Stanford University.

MERZBACHER, CLAUDE FELL (1947)........Assistant Professor of Physical Science
B.S., University of Pennsylvania; M.A., Claremont Graduate School. Certificat d'Etudes Francaises. Licensed Professional Chemical Engineer.

† MESSIER, LEONARD N. (1946)........Professor of French
A.B., San Diego State College; M.A., Ph.D., University of California. Officier d'Académie.

MILLER, MARTHA H. (Mrs. A. R.) (1952)........Assistant Professor of Education
A.B., M.A., San Diego State College.

MILLS, JACK (1957)........Assistant Professor of Speech Arts
A.B., M.A., University of Florida; Ph.D., University of Illinois.

MILNE, DAVID S. (1946)........Chairman, Division of Social Sciences; Professor of Sociology
A.B., University of California at Los Angeles; M.A., University of Southern California; Ph.D., University of Chicago.

MILOW, E. DEAN (1957)........Assistant Professor of Geology
B.S., San Diego State College; graduate study at Stanford University.

MISHNE, ALAN S. (1956)........Activities Adviser
A.B., San Diego State College.

MOE, CHESNEY R. (1931)........Professor of Physics
A.B., M.A., Stanford University; Ph.D., University of Southern California. Registered Electrical Engineer.

MONTEVERDE, JOHN P. (1954)........Assistant Professor of English
B.A., M.A., Ph.D., University of California at Los Angeles.

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* On leave Semester I.
† On leave Semester II.

MORGAN, CHARLES (1949)........Professor of Engineering
M.E., Stevens Institute of Technology; M.S., University of California. Registered Professional Mechanical Engineer.

MORRIS, RICHARD H. (1957)........Assistant Professor of Physics
A.B., Ph.D., University of California.

MOSES, DOROTHY V. (1958)........Assistant Professor of Nursing
B.S., P.H.N., M.S., University of California at Los Angeles.

MURPHY, MARGARET L. (Mrs. S. U.) (1955)........Assistant Professor of Physical Education
B.A., University of California; M.S., Ed.D., University of Oregon.

MYERS, MABEL A. (1946)........Professor of Microbiology
A.B., M.A., Pomona College; Ph.D., Cornell University.

NARDELLI, ROBERT R. (1953)........Associate Professor of Education
B.A., M.A., Arizona State College; Ph.D., University of California.

NASATIR, ABRAHAM PHINEAS (1928)........Professor of History
A.B., M.A., Ph.D., University of California.

NELSON, BURT (1957)........Assistant Professor of Physical Science
B.S., M.S. (Astronomy), M.S. (Philosophy), University of Wisconsin.

NELSON, SHERWOOD M. (1956)........Assistant Professor of Philosophy
A.B., Phillips University; M.A., Ph.D., University of California.

NEUNER, EDWARD J., JR. (1957)........Assistant Professor of Economics
A.B., Brooklyn College; A.M., University of Wisconsin; Ph.D., Columbia University.

NICHOLS, AMBROSE R., JR. (1939)........Professor of Chemistry
B.S., University of California; Ph.D., University of Wisconsin.

NISSAN, ANWAR (1958)........Instructor in Mathematics
B.S., M.A., University of Kansas; additional graduate study at Ohio State University.

NORLAND, CALVERT E. (1947)........Assistant Professor of Zoology
A.B., Pomona College; M.S., University of California. Graduate study at Claremont Colleges.

NORWOOD, FRANK W. (1957)........Assistant Professor of Speech Arts
B.A., M.A., Queens College; additional graduate study at University of Missouri and Ohio State University.

NYE, NEVA E. (1953)........Associate Professor of Nursing
B.A., University of Michigan; M.Litt., University of Pittsburgh.

O'BYRNE, ERNEST B. (1954)........Vice President
A.B., A.M., Colorado State College of Education; Ph.D., Stanford University.

O'DAY, EDWARD F., JR. (1957)........Assistant Professor of Psychology
B.S., M.A., Ph.D., University of Florida.

O'DELL, ROBERT D. (1957)........Instructor in Industrial Arts
A.B., M.A., San Diego State College.

ODMARK, VERN E. (1952)........Associate Professor of Accounting
B.S., St. Cloud State Teachers College; M.A., University of Minnesota; Ph.D., University of Missouri; Public Accountant.

OLSEN, ALBERT W. (1957)........Assistant Professor of Physical Education
A.B., M.A., San Diego State College.

OLSON, ANDREW C., JR. (1946)........Professor of Zoology
A.B., San Diego State College; M.S., University of Idaho; Ph.D., Oregon State College.

OSBORN, CLARENCE G. (1928-29 and 1937)........Professor of History and Political Science
A.B., A.M., Ph.D., Stanford University.

PADGETT, L. VINCENT (1956)........Assistant Professor of Political Science
B.S., Ph.D., Northwestern University.

PAHOPIN, JO S. (Mrs.) (1958)........Associate Professor of Home Economics
B.S., Teachers College, Columbia University; M.S., Ph.D., Ohio State University.

PARKER, MARION L. (Mrs. D. G.) (1951)........Administrative Analyst
A.B., San Diego State College; M.A., University of Southern California.

PEIFFER, HERBERT C., JR. (1937)........Dean of Students;
Professor of Psychology and Guidance
A.B., University of California at Los Angeles; M.A., Ph.D., Stanford University.

PEMBERTON, LeROY A. (1955)........Assistant Professor of Business Education
A.B., A.M., Colorado State College; additional graduate study, University of California at Los Angeles.

PERKINS, WILLIAM A. (1955)........Assistant Professor of English
A.B., Ph.D., Stanford University.

PERSON, GERALD A. (1957)........Assistant Professor of Education
B.A., Augsburg College; M.Ed., Ph.D., University of Minnesota.

PETTEYS, MANVILLE R. (1957)........Co-ordinator of Extended Services;
Assistant Professor of Education
B.A., Willamette University; M.A., Ed.D., Stanford University.

PFAFF, PAUL LEWIS (1931)........Professor of Speech Arts
A.B., Stanford University; M.A., Ph.D., University of Southern California.

PHILLIPS, GEORGE L. (1947)........Professor of English
A.B., Dartmouth College; M.A., Harvard University; Ph.D., Boston University.

PHILLIPS, KENNETH (1950)........Professor of Industrial Arts
B.S., State College for Teachers (Buffalo); M.A., Ph.D., Ohio State University.

PHILLIPS, WALTER THOMAS (1927)........Professor of Spanish
A.B., University of Washington; M.A., Stanford University; Ph.D., University of Southern California.

PIERSON, ALBERT C. (1954)........Assistant Professor of Management
B.L.A.S., University of Illinois; M.B.S., Harvard University; additional graduate study at Columbia University.

PIFFARD, GUERARD (1956)........Assistant Professor of French
B.A., M.A., Colorado College; Ph.D., Stanford University.

PINCETL, STANLEY J., JR. (1955)........Assistant Professor of History
B.A., M.A., Ph.D., University of California; Doctor of University, University of Paris (Sorbonne), France.

PLATZ, MARVIN H. (1955)........Assistant Professor of Education
B.S., Northeast Missouri State Teachers College; M.Ed., Ed.D., University of Missouri.

POST, LAUREN CHESTER (1937)........Professor of Geography
A.B., M.A., Ph.D., University of California.

POVENMIRE, E. KINGSLEY (1946)........Associate Professor of Speech Arts
B.S., Ohio State University; M.F.A., Yale University.

POWELL, DON W. (1953)........Associate Professor of Speech Arts
B.S., Kirksville State Teachers College; M.F.A., State University of Iowa.

PRESTON, DUDLEY A. (1948)........Associate Professor of Botany
B.S., Washington State College; M.S., Ph.D., University of Minnesota.

PROUTY, HELEN L. (1950)........Associate Professor of Education
B.S., University of Nebraska; M.A., Ph.D., University of California.

PSOMAS, THEMISTOCLES (1957)........Assistant Professor of Psychology
B.A., University of Southern California; Ph.D., University of California.

QUIETT, FREDERICK T. (1957)........Assistant Professor of Engineering
Geol.E., M.S., Colorado School of Mines. Registered Professional Engineer (Mining).

RADER, DANIEL L. (1954)........Associate Professor of History
A.B., M.A., Ph.D., University of California.

RAGEN, KATHERINE M. (1947)........Professor of History
A.B., Penn College; M.A., Bryn Mawr College; Ph.D., University of Wisconsin.

RAO, M. V. RAMA (1957)........Assistant Professor of Engineering
B.S.M.E., University of Madras, India; Diploma in Aeronautics, Indian Institute of Science; Postgraduate Diploma in M.E., Imperial College of Science and Technology, London; M.S.M.E., Ph.D., University of Illinois.

RASMUSSEN, LAWRENCE M., JR. (1958)........Instructor in Art
B.A., San Diego State College; M.A., University of California at Los Angeles.

RATTY, FRANK J. (1954)........Assistant Professor of Zoology
B.A., San Diego State College; M.S., Ph.D., University of Utah.

REEL, JANE E. (1958)........Instructor in Education
A.B. and graduate study, San Diego State College.

REZNIKOFF, SIMON (1956)........Assistant Professor of Management
B.A., University of Missouri; LL.B., Columbia University.

RHODE, WILLIAM E. (1957)........Assistant Professor of Political Science
B.S., M.A., Ph.D., Michigan State University.

RICHARDSON, BERNARD E. (1957)........Librarian III
B.A., B.L.S., University of Minnesota.

* RICHARDSON, ROBERT W. (1939, except 1946-48)........Professor of Geography
A.B., Ph.D., University of California.

RIDGE, MARTIN (1955)........Assistant Professor of History
B.E., Chicago Teachers College; M.A., Ph.D., Northwestern University.

RIDOUT, LIONEL U. (1946, except 1949-50)........Professor of History
A.B., San Diego State College; M.A., University of California; Ph.D., University of Southern California.

RIGGS, LESTER G. (1950, except 1951-52)........Associate Professor of Mathematics
B.S., University of Illinois; M.S., Syracuse University; Ph.D., Northwestern University.

ROBERTS, ELLIS E. (1949)........Associate Professor of Geology
B.S., Michigan College of Mining and Technology; M.S., California Institute of Technology; Ph.D., Stanford University.

ROBERTSON, FRANK O. (1953)........Director of Health Services
B.S., M.S., B.S., (Medicine), University of North Dakota; M.D., University of Oregon Medical School.

ROBINSON, DUDLEY HUGH (1928)........Chairman, Division of Physical Sciences;
Professor of Chemistry
B.S., Louisiana State University; M.S., State University of Iowa; Ph.D., University of Southern California. Registered Chemical Engineer.

RODNEY, JOSEPH A. (1957)........Assistant Professor of Education
A.B., M.A., San Diego State College.

ROEMMICH, HERMAN (1958)........Test Officer; Associate Professor of Education
B.A., Jamestown College; M.A., University of Colorado; M.A., Teachers College, Columbia University; Ph.D., University of Washington.

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* On leave 1958-59.

ROGERS, PHYLLIS N. (Mrs. R. E.) (1958) .... Instructor in Speech Arts
B.A., M.A., University of Michigan.

ROGERS, SPENCER LEE (1930) .... Professor of Anthropology
A.B., San Diego State College; M.A., Claremont Colleges; Ph.D., University of Southern California.

ROHFLEISCH, KRAMER J. (1947) .... Professor of History
A.B., M.A., Ph.D., University of California.

ROST, NORMAN (1951) .... Associate Professor of Music
B.M., M.M., University of Michigan.

ROZAK, BETTY F. (Mrs. T.) (1958) .... Librarian II
B.A., University of California at Los Angeles; M.L.S., University of California.

ROWE, ROBERT D. (1946) .... Professor of Chemistry
A.B., Stanford University; Engineer in Engineering Chemistry; Ph.D., Stanford University.

RUJA, HARRY (1947) .... Professor of Philosophy
A.B., University of California at Los Angeles; M.A., University of Chicago; M.A., San Diego State College; Ph.D., Princeton University.

RUMBAUGH, DUANE M. (1954) .... Assistant Professor of Psychology
A.B., University of Dubuque; M.A., Kent State University; Ph.D., University of Colorado.

* RUOCCO, ILSE H. (Mrs. L.) (1934) .... Associate Professor of Art
B.E., University of California at Los Angeles; M.A., Columbia University.

RYAN, FREDERICK L. (1946) .... Professor of Economics
B.S., Tufts College; Ph.D., University of California.

SAMPLES, HOWELL GORDON, JR. (1950) .... Librarian II
A.B., University of Georgia; B.S. in L.S., George Peabody College for Teachers.

SANDERLIN, GEORGE W. (1955) .... Associate Professor of English
B.A., American University; Ph.D., Johns Hopkins University.

SANDSTROM, GLENN A. (1956) .... Assistant Professor of English
B.A., M.A., Washington State College; Ph.D., University of Illinois.

SCHALLES, FRANCES IRENE (1950) .... Librarian III
A.B., San Diego State College. Additional graduate study.

SCHMIDT, JOHN L. (1957) .... Assistant Professor of Education
B.S., Lawrence College; M.S., Ph.D., University of Wisconsin.

SCHRUPP, MANFRED H. (1948) .... Dean of Education Division;
Professor of Education
B.S., M.Ed., Ph.D., University of Minnesota.

SCHUNERT, JIM R. (1948) .... Professor of Education
B.S., M.A., Ph.D., University of Minnesota.

SCHUTTE, WILLIAM H. (1947) .... Associate Professor of Physical Education
B.S., University of Idaho; M.S., University of Southern California.

SCHWOB, MARION L. (Mrs. W. E.) (1934) .... Associate Professor of Physical Education
B.A., State University of Iowa; M.S., University of Southen California.

SCOTT, FRANK L. (1947) .... Professor of Recreation
A.B., Grinnell College; M.A., Ph.D., University of Michigan.

SEARLES, HERBERT L. (1957) .... Visiting Professor of Philosophy
B.A., Dartmouth College; B.D., Union Theological Seminary; M.A., Ph.D., State University of Iowa.

SELLMAN, HUNTON D. (1946) .... Professor of Speech Arts
B.S., Purdue University; M.S., University of Arizona. Additional graduate study at University of California, University of North Carolina and Yale University.

SERRETT, THOMAS M. (1958) .... Librarian I
B.S., Tulane University; M.S.L.S., Louisiana State University.

SHANNON, FLORENCE S. (Mrs. E.L.) (1933) .... Associate Professor of Physical Education
A.B., University of California; M.S., University of Southern California.

SHARKEY, GERALD K. (1956) .... Assistant Professor of Marketing
A.B., St. John's University; M.S., Georgetown University; Ph.D., University of Southern California.

SHAW, PETER W. (1955) .... Assistant Professor of Mathematics
B.A., M.A., University of Toronto; Ph.D., Stanford University.

SHAW, ROGER L. (1956) .... Instructor in Mathematics
B.A., M.A., University of Denver; additional graduate study at the Universities of Colorado and California.

SHEPARD, DAVID C. (1956) .... Assistant Professor of Zoology
A.B., Ph.D., Stanford University.

SHEPPARD, JOHN C. (1957) .... Assistant Professor of Chemistry
A.B., San Diego State College; M.A., Ph.D., Washington University.

SHIELDS, ALLAN E. (1949) .... Associate Professor of Philosophy
A.B., University of California; M.A., Ph.D., University of Southern California.

SHIRA, DONALD W., JR. (1958) .... Librarian I
B.A., University of Redlands; M.A.L.S., George Peabody College.

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* On leave 1958-59.

SHOUSE, CLAUDE F. (1946) .... Associate Professor of English
A.B., Georgetown College; M.A., University of Kentucky; Ph. D., University of Southern California.

SHUSTER, LOUIS J. (1957) .... Assistant Professor of Management
A.B., Sacramento State College; M.B.A. and additional graduate study at the University of Washington.

SHUTTS, WILLIAM H. (1958) .... Professor of Engineering
B.S., M.S., University of Colorado; Ph.D., University of Texas.

SIDOWSKI, JOSEPH B. (1956) .... Assistant Professor of Psychology
B.A., Pomona College; M.S., Ph.D., University of Wisconsin.

SILVERNAIL, CHESTER J. (1949) .... Assistant Professor of Astronomy
A.B., San Diego State College; M.A., Claremont Graduate School; additional graduate study at University of California at Los Angeles.

SKOLIL, LESTER L. (1951) .... Professors of Physics
A.B., Doane College; M.A., University of Nebraska; Ph.D., University of California.

SMITH, CHARLES ROBERTS (1933) .... Associate Professor of Physical Education
A.B., San Diego State College; M.S., University of Southern California.

SMITH, CLIFFORD EDWARD (1937) .... Professor of Astronomy
A.B., Carleton College; M.A., Swarthmore College; Ph.D., University of California.

SMITH, DEANE FRANKLIN (1939) .... Associate Professor of Music
B.M., M.M., Northwestern University.

SMITH, HAYDEN R. (1957) .... Assistant Professor of Education
B.A., Albion College; M.A., Ph.D., University of Michigan.

SMITH, J. DAYTON (1955) .... Professor of Music
A.B., B.M., St. Olaf College; M.M., University of Nebraska; additional graduate study at Florida State University.

SMITH, JOHN R. (1957) .... Assistant Professor of Psychology
B.A., Occidental College; M.A., Ph.D., University of California at Los Angeles.

SMITH, LESTER K. (1957) .... Librarian II
B.A., San Diego State College; M.S., in L.S., University of Southern California.

SMITH, LOUIS E., JR. (1946) .... Professor of Physics
A.B., San Diego State College; Ph.D., University of Washington.

SMITH, NEWTON B. (1954) .... Associate Professor of Mathematics
B.A., Reed College; M.A., Oregon State College; Ph.D., Iowa State College.

SNIDER, MERVIN S. (1953) .... Associate Professor of Music
B.A., Pomona College; M.A., Eastman School of Music; additional graduate study at Northwestern University and Claremont Graduate School.

SNODGRASS, HERSCHEL R. (1954) .... Associate Professor of Physics
B.A., M.S., University of New Mexico; Ph.D., University of California.

SORENSON, GEORGE N. (1946) .... Chairman, Division of Fine Arts;
Professor of Art
A.B., San Diego State College; M.A., University of Southern California; graduate study at University of California and University of Minnesota.

SPANGLER, JOHN A. (1946) .... Professor of Chemistry
A.B., Ph.D., West Virginia University.

* SPORTSMAN. CHARLES C. (1947) .... Associate Professor of Physical Education
B.S., North Texas State College; M.S., and additional graduate study at the University of Southern California.

SPRINGSTON, CHRISTINE (1930) .... Associate Professor of Music
B.A., B.M., University of Redlands; M.A., University of Washington, Diplomée d'execution, Conservatoire Americain, Fontainebleau, France.

SQUIER, DONALD P. (1957) .... Assistant Professor of Mathematics
B.S., Ph.D., Stanford University.

STANLEY, EMILO J. (1958) .... Instructor in Geography
B.A., M.A., and additional graduate study, University of Michigan.

STEVENS, WALTER R. (1956) .... Assistant Professor of Psychology
A.B., Park College; M.A., Ph.D., Michigan State University.

STEWART, CHARLES J. (1955) .... Assistant Professor of Chemistry
B.A., San Diego State College; M.S., Ph.D., Oregon State College.

STEWART, PAUL E. (1953) .... Associate Professor of Physical Science
A.B., College of Wooster; Ph.D., Stanford University.

STONE, HAMILTON L. (1947) .... Associate Professor of Engineering
B.S., U. S. Naval Academy. Graduate study at U. S. Naval Postgraduate School. Registered Mechanical Engineer.

STONE, JOHN PAUL (1930) .... College Librarian; Professor of Library Science
B.S., Northwest Missouri State Teachers College; B.S., M.S., University of Illinois; Ph.D., University of Chicago.

STONE, SANFORD H. (1956) .... Associate Professor of Engineering
B.S.E., M.S.E., University of Michigan; M.S., University of Illinois. Registered Professional Civil Engineer.

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* On leave Semester I.

STORM, ALVENA (Mrs. Eugene) (1926) Associate Professor of Geography
A.B., M.A., University of California.

STOUGH, MORROW F. (1950) Professor of Education
A.B., Wittenberg College; M.A., University of Pennsylvania; Ph.D., University of California.

STRAND, MARGUERITE R. (Mrs. R. L.) (1955) Assistant Professor of Education
A.B., M.A., Florida State College for Women; Ph.D., University of Washington.

STRAUB, LURA LYNN (1948) Associate Professor of Business Education
A.B., Jamestown College; M.C.S., Indiana University; additional graduate study at University of Wyoming and University of Denver.

SWIGGETT, JEAN D. (1946) Professor of Art
A.B., San Diego State College; M.F.A., University of Southern California; additional graduate study at Claremont Colleges.

SZABO, ANDREW (1955) Librarian II
M.S. in L.S., Drexel Institute of Technology; Ph.D., University of Pecs, Hungary.

TALBOY, RUTH A. (1947) Associate Professor of Home Economics
B.S., Iowa State College; M.A., Stanford University; additional graduate study at Universities of Minnesota, Iowa, and California.

TANZER, JOANN L. (Mrs. J. L.) (1956) Assistant Professor of Art
B.A., M.A., Michigan State University.

TAYLOR, JAMES W. (1950) Associate Professor of Geography
A.B., Northwestern State College; M.A., Ph.D., Louisiana State University.

TAYLOR, KENNETH M. (1949) Professor of Zoology
A.B., M.A., Ph.D., University of California at Los Angeles.

TAYLOR, MERREL A. (1946) Assistant Professor of Zoology
A.B., Indiana University; B.S.F., M.S., University of Michigan; additional graduate study at Scripps Institution of Oceanography.

TEASDALE, JOHN G. (1956) Assistant Professor of Physics
A.B., Ph.D., University of California at Los Angeles.

TEBOR, IRVING B. (1957) Assistant Professor of Sociology
B.S., Northern Illinois State Teachers College; M.A., University of Chicago; Ph.D., Oregon State College.

TERHUNE, JOHN A. (1947) Assistant Professor of Physics
B.S., U. S. Naval Academy; M.S., Harvard University.

TERRY, WILLIAM L. (1946) Chairman, Division of Health Education, Physical Education and Recreation; Professor of Physical Education
A.B., Western Kentucky Teachers College; M.S., Indiana University; Ed.D., Columbia University.

THEOBALD, JOHN R. (1946) Professor of English
B.A., St. Catherine's College, Oxford University; M.A., Mansfield College, Oxford University; Ph.D., University of Iowa.

THIEL, DONALD W. (1957) Assistant Professor of Industrial Arts
B.S., University of Nebraska; M.A., Stout State College; additional graduate study at Ohio State University.

THOMAS, ALICE E. (Mrs. H.) (1955) Associate Professor of Home Economics
B.S., Bethany College, Kansas; M.A., Columbia University; additional graduate study at Universities of California and Washington.

THOMAS, BLAKEMORE E. (1956) Assistant Professor of Geology
A.B., University of California; M.S., Ph.D., California Institute of Technology.

TIDWELL, JAMES N. (1947) Professor of English
A.B., Simmons University; M.A., University of Oklahoma; Ph.D., Ohio State University.

TOLLEFSEN, DOROTHY J. (1946) Associate Professor of Physical Education
A.B., M.A., University of California.

* TORBERT, FRANCES B. (Mrs. H.) (1937) Professor of Management
A.B., Stanford University; M.A., University of Southern California; additional graduate study at Stanford University.

TOZER, LOWELL (1954) Associate Professor of English
A.B., University of Chicago; M.A., De Paul University; Ph.D., University of Minnesota.

TRAIL, MABEL COY (1935) Professor of English
A.B., Parsons College; M.A., State University of Iowa; Ph.D., University of Southern California.

TREAT, WOLCOTT C. (1950) Professor of Psychology
A.B., Harvard College; A.M., Harvard University; Ph.D., Stanford University.

TRIMMER, RUSSELL L. (1955) Associate Professor of Education
A.B., Stanford University; M.A., Ph.D., Claremont Graduate School.

TUCKER, GORDON H. (1945) Professor of Zoology
B.S., M.S., University of South Carolina; Ph.D., University of North Carolina.

TURNER, MERLE B. (1950) Associate Professor of Psychology
A.B., Willamette University; M.A., Stanford University; Ph.D., University of Colorado.

VAN AKEN, MARK J. (1957) Assistant Professor of History
A.B., University of Michigan; M.A., Ph.D., University of California.

VANCE, ROBERT W. (1954) Physician and Surgeon
B.S., University of South Dakota; M.D., Northwestern University.

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* On leave Semester II.

VITALE, FRANK N. (1956) Assistant Professor of Physical Education
B.A., Cornell University; M.A., Teachers College, Columbia University.

VOEKS, VIRGINIA W. (1949) Professor of Psychology
B.S., M.S., University of Washington; Ph.D., Yale University.

WADSWORTH, EARL P., JR. (1956) Assistant Professor of Chemistry
B.S., M.S., University of New Hampshire; Ph.D., Iowa State College.

WALBA, HAROLD (1949) Professor of Chemistry
B.S., Massachusetts State College; Ph.D., University of California.

WALCH, HENRY A., JR. (1955) Assistant Professor of Microbiology
B.A., Ph.D., University of California at Los Angeles.

WALLACE, MARJORIE E. (1957) Activities Adviser
B.S., University of Southern California.

WALLACE, ROBERT D. (1957) Assistant Professor of Art
B.A., M.A., Stanford University; D.Litt., University of Geneva.

WALLING, CURTIS R. (1931) Professor of Engineering
A.B., E.E., Stanford University; additional graduate study at Stanford University and the University of Southern California. Registered Electrical Engineer.

WALSH, MARY A. (Mrs. W. E.) (1955) Assistant Professor of Education
B.S., Northwestern University; M.A., Teachers College, Columbia University.

WANLASS, DOROTHY C. (1955) Assistant Professor of English
B.S., Utah State Agricultural College; M.A., Ph.D., Columbia University.

WARMER, MARGERY ANN (Mrs. J. C.) (1956) Dean of Activities
A.B., M.S., and additional graduate study at the University of Southern California.

WARREN, E. JUNE (1957) Admissions Counselor
B.S., Northern State Teachers College, South Dakota; M.A., San Diego State College.

WARREN, LEROY J. (1955) Assistant Professor of Mathematics
B.A., College of Idaho; M.A., Ph.D., University of Oregon.

WATSON, DONALD R. (1939) Dean of the College; Professor of Physical Science
A.B., B.S., A.M., Ed.D., University of Southern California.

WEBB, CHARLES R., JR. (1949) Professor of History
A.B., M.A., University of California; M.A., Ph.D., Harvard University.

WENDLING, AUBREY (1954) Associate Professor of Sociology
A.B., San Francisco State College; M.A., Ph.D., University of Washington.

WETHERILL, WILLIAM H. (1957) Assistant Professor of Education
B.Ed., University of Toledo; M.A., Stanford University; additional graduate study at the University of Michigan.

WHEELER, GEORGIA I. (Mrs. A.) (1957) Assistant Professor of Education
B.M., Southwestern at Memphis; M.A., Teachers College, Columbia University.

WHITE, ALFRED E. (1946) Assistant to the Dean of the College; Professor of Education
A.B., M.A., University of California; Ed.D., Stanford University.

WHITE, THOMAS R. (1958) Librarian II
B.A., San Francisco State College; M.A., M.A.L., University of Washington.

WICK, ARNE N. (1958) Associate Professor of Chemistry
B.S., M.S., Ph.D., University of Minnesota.

WIDMER, KINGSLEY (1956) Assistant Professor of English
B.A., M.A., University of Minnesota; Ph.D., University of Washington.

WILCOX, ROBERT F. (1950) Professor of Political Science
A.B., M.A., Stanford University; M.A., Columbia University; Ph.D., Stanford University.

WILLERDING, MARGARET F. (1956) Assistant Professor of Mathematics
A.B., Harris Teachers College; M.A., Ph.D., St. Louis University.

WILLIAMSON, DELBERT E. (1957) Assistant Professor of Accounting
A.B., San Jose State College; M.B.A. and additional graduate study at Stanford University.

WILSON, ALLAN N. (1954) Assistant Professor of Physics
B.S., Webb Institute of Naval Architecture; Ph.D., University of California.

WIMER, ARTHUR C. (1950) Professor of Journalism
B.Lit., Columbia University; M.A., University of Iowa.

WINEMAN, WALTER R. (1956) Assistant Professor of History
B.S., State Teachers College, Pennsylvania; M.L., Ph.D., University of Pittsburgh.

WOLF, ERNEST M. (1947) Associate Professor of German and Romance Languages
Study at the Universities of Berlin, Paris, Muenster, Cambridge and Bonn. Ph.D., University of Bonn.

WOLTER, GERHARD H. (1957) Assistant Professor of Physics
B.S., M.S., University of Berlin.

WOOD, JOHN B. (1956) Librarian II
A.B., University of Texas; M.A. in L.S., University of Denver.

WOODRUFF, JAMES F. (1956) Assistant Professor of Geography
A.B., M.A., Ph.D., University of Michigan.

WRIGHT, WILLIAM H. (1921) Professor of Accounting
B.S., M.A., University of California; Ph.D., University of Southern California. Public Accountant.

YAHR, CHARLES C. (1955) Assistant Professor of Geography
B.S., M.S., Illinois State Normal University; Ph.D., University of Illinois.

YOUNG, FRANK W. (1958) Assistant Professor of Sociology
B.A., University of Washington; Ph.D., Cornell University.

ZIEGENFUSS, GEORGE (1948) Professor of Physical Education
B.A., University of Washington; M.A., Ed.D., Teachers College, Columbia University.

LECTURERS

ALFANO, WILLIAM A. (1957) Lecturer in Physics
M.S., San Diego State College. Convair, Division of General Dynamics Corporation.

AUGUSTIN, EUGENE P. (1958) Lecturer in Engineering
B.S., San Diego State College. Convair, Division of General Dynamics Corporation.

BACK, GILBERT (1950) Lecturer in Music
Professional musician.

BAUMGARTNER, MARGERY B. (Mrs. R. N.) (1956) Lecturer in Education
M.S., Bank Street College of Education. Grossmont Adult High School.

BLACK, NATHALIA C. (Mrs. V. G.) (1958) Lecturer in English
Writer.

CARSOLA, ALFRED J. (1956) Lecturer in Geology
Ph.D., University of California, La Jolla. U. S. Navy Electronics Laboratory.

DE JULIEN, LORENZ F. (1949) Lecturer in Marketing
M.B.A., Harvard Graduate School. Self employed.

DENNO, HILDEGARDE H. (Mrs. R.) (1957) Lecturer in Education
M.A., Teachers College, Columbia University.

EARNEST, LESTER E. (1958) Lecturer in Political Science
City of San Diego.

EASTMAN, RICHARD O. (1956) Lecturer in Physics
M.S., San Diego State College. U. S. Navy Electronics Laboratory.

EHRICKE, KRAFFT A. (1958) Lecturer in Physics
M.S., Technical University, Berlin. Convair, Division of General Dynamics Corporation.

ELLIOTT, RAYMOND A. (1957) Lecturer in Physics
M.S. in E.E. U. S. Navy Electronics Laboratory.

EPLER, MILDRED R. (Mrs. E. E.) (1958) Lecturer in Education
A.B., San Diego State College. San Diego City Schools.

EVANS, WILLIAM G. (1957) Lecturer in Management
B.S., Canisius College. Convair, Division of General Dynamics Corporation.

GROSS, CHARLES E. (1958) Lecturer in Management
M.A., State University of Iowa. Convair, Division of General Dynamics Corporation.

HALSEY, HOWARD W. (1956) Lecturer in Physics
M.S., Virginia Polytechnic Institute. Convair, Division of General Dynamics Corporation.

HANSEN, HAROLD J., JR. (1956) Lecturer in Physics
M.S. in E.E., University of Michigan. Ryan Aeronautical Company.

HARMEYER, WILLIAM J. (1957) Lecturer in Accounting
M.A., Ball State Teachers College. Certified Public Accountant. Ryan Aeronautical Company.

HARMON, JAMES E. (1958) Lecturer in Political Science
B.A., San Diego State College.

HARVEY, WALTER E. (1957) Lecturer in Journalism
San Diego City Schools.

HATCH, CLIFFORD L. (1958) Lecturer in Education
M.A., Teachers College, Columbia University. San Diego City Schools.

HERZOG, DONALD R. (1958) Lecturer in Management
Ph.D., State University of Iowa. Solar Aircraft Company.

HODGES, JAMES H. (1958) Lecturer in Health Education
B.A., San Diego State College. San Diego City Schools.

HOUSE, HERSCHEL A. (1958) Lecturer in Political Science
B.S., U. S. Naval Academy. U. S. Navy (Retired).

HOWES, VIRGIL M. (1958) Lecturer in Education
Ed.D., University of California at Los Angeles. San Diego County Schools.

HUFF, GEORGE D. (1939) Lecturer in Health and Hygiene
M.D., University of Texas Medical School.

HULL, LAWRENCE J. (1957) Lecturer in Engineering
B.S. in M.E., South Dakota School of Mines. Ryan Aeronautical Company.

JENKINS, IRVIN B. (1957) Lecturer in Management
B.S., Kansas State College. Convair, Division of General Dynamics Corporation.

KRIEGER, CHARLES J. (1958) Lecturer in Astronomy
Ph.D., University of California. U. S. Navy Electronics Laboratory.

KRONEMYER, ROBERT E. (1955) Lecturer in Accounting
M.A., University of Chicago. Certified Public Accountant. Attorney.

LAMB, NEIL W. (1958) Lecturer in Management
Ed.D., University of California. Convair, Division of General Dynamics Corporation.

LLOYD, STANLEY J. (1958) Lecturer in Microbiology
M.D., Boston University School of Medicine. Pathologist.

LOCKWOOD, WALLACE V. (1956) Lecturer in Psychology
Ph.D., University of California at Los Angeles. Veterans Administration.

LOOMIS, NOEL M. (1958) Lecturer in English
Writer.

LOVELL, DALE F. (1956) Lecturer in Management
LL.B., Balboa University. U. S. Naval School for Instructors.

McGUIRE, RICHARD W. (1957) Lecturer in Management
Ph.D., Ohio State University. Convair, Division of General Dynamics Corporation.

MEDVED, DAVID B. (1958) Lecturer in Physics
Ph.D., University of Pennsylvania. Convair, Division of General Dynamics Corporation.

MERRILL, EDWARD A. (1957) Lecturer in Marketing
B.A., University of Maine. Formerly vice president, Young & Rubicam.

MULLENIX, CARLOS W. (1950) Lecturer in Music
Professional musician.

MYERS, ORLO E. (1957) Lecturer in Chemistry
Ph.D., Washington University. Convair, Division of General Dynamics Corporation.

REED, NANCY J. (Mrs. D.) (1956) Lecturer in Speech Arts
A.B., San Diego State College. Speech therapist.

RIEL, FRANK J. (1958) Lecturer in Chemistry
Ph.D., Purdue University. Narmco Industries, Inc.

ROSTOKER, NORMAN (1957) Lecturer in Physics
D.Sc., Carnegie Institute of Technology. General Atomic, Division of General Dynamics Corporation.

SAASTAD, ARTHUR (1956) Lecturer in Mathematics
M.A., Northwestern University. Convair, Division of General Dynamics Corporation.

SCHEY, OLE (1957) Lecturer in Mathematics
M.A., University of Minnesota. Convair, Division of General Dynamics Corporation.

SCHMITT, ALFRED F. (1955) Lecturer in Engineering
Ph.D., Purdue University. Ryan Aeronautical Company.

SHOLDERS, OLIVER B. (1956) Lecturer in Engineering
M.C.E., Rensselaer Polytechnic Institute. Registered Civil Engineer. Sholders & Tanner Engineering, Inc.

SHOWN, WILBUR V. (1956) Lecturer in Physics
B.S., U. S. Naval Academy.

SIMMONS, ROBERT E. (1955) Lecturer in Mathematics
M.S., San Diego State College. Navy Electronics Laboratory.

SMYTH, JOHN B. (1956) Lecturer in Physics
Ph.D., Brown University. Smyth Research Associates.

SNUDDEN, LESLIE W. (1958) Lecturer in Accounting
M.B.A., University of Southern California. Certified Public Accountant. Ryan Aeronautical Company.

SPANGLER, CHARLES B. (1958) Lecturer in Mathematics
M.S., University of Pittsburgh. Convair, Division of General Dynamics Corporation.

STUBBS, JOHN F. (1955) Lecturer in Business Education
M.A., San Diego State College. Mt. Miguel High School.

SYLVESTER, HELEN K. (1945) Lecturer in Education
A.B., San Diego State College; graduate study at Columbia University. Principal, Euclid School.

TERREL, CHARLES L. (1957) Lecturer in Management
M.B.A., Harvard Graduate School of Business Administration. Convair, Division of General Dynamics Corporation.

THILE, EDMUND L. (1958) Lecturer in Speech Arts
M.A., University of Southern California.

VAILE, ROLAND S. (1956) Lecturer in Marketing
M.A., Harvard University.

WALLEN, PHYLLIS W. (Mrs. H.) (1958) Lecturer in Art
A.B., San Diego State College.

WALT, MARY V. (Mrs. T. E.) (1958) Lecturer in Education
A.B., San Diego State College.

WILTON, JOHN W. (1955) Lecturer in Zoology
M.A., San Diego State College. Grossmont High School.

WOODARD, WILLIAM T. (1955) Lecturer in Geology
B.S., U. S. Naval Academy.

WOODWARD, LAWRENCE E. (1957) Lecturer in Business Education
M.A., San Diego State College. Mt. Miguel High School.

ASSISTANTS

ALCARAZ, ERNEST C. (1958)......Assistant in Physics
A.B., San Diego State College.

BELLAIRS, DONALD W. (1958)......Assistant in Mathematics
A.B., San Diego State College.

BERGER, AUDREY V. (1958)......Assistant in Nursing
B.S., University of Pittsburgh.

BROOKES, JOHN A. (1958)......Assistant in Zoology
A.B., Occidental College; graduate study, San Diego State College.

COCHRAN, FRANCIS L. (1958)......Assistant in Mathematics
B.S., University of Illinois.

COLE, FRANKLIN B. III (1958)......Assistant in Zoology
B.S., San Diego State College.

DAVIS, DALTON W. (1958)......Assistant in Accounting
B.S., California Maritime Academy; graduate study, San Diego State College.

DUKE, MARGARET A. (Mrs. E.) (1958)......Assistant in Mathematics
B.A., San Diego State College.

FOSTER, FREDERICK T. (1954)......Assistant in Mathematics
A.B., San Diego State College.

GEHRING, M. RICHARD (1958)......Assistant in Physical Education
B.A., San Diego State College.

GERLACH, CAROLE M. (1958)......Assistant in Physical Education
B.A., San Francisco State College.

GIBBS, JAMES H. (1958)......Assistant in Mathematics
B.S., University of Oklahoma; graduate study, Abilene Christian College.

GOOKIN, WILLIAM E. (1958)......Assistant in Physical Education
B.S. and graduate study, San Diego State College.

HANSEN, CATHERINE G. (Mrs. W.) (1958)......Assistant in Physical Education
B.A. and graduate study, San Diego State College.

HARTLEY, SHIRLEY M. (Mrs. J.) (1956)......Assistant in Physical Education
A.B., San Diego State College.

HEMMINGER, ROBERT L. (1958)......Assistant in Chemistry
B.S., Greenville College, Illinois.

HOLMES, DON E. (1958)......Assistant in Chemistry
B.S., University of Oklahoma.

HUNT, ADRIENNE B. (1958)......Assistant in Nursing
B.S., San Diego State College.

JOHNS, EDWARD, JR. (1958)......Assistant in Physical Education
A.B., San Diego State College.

JULCA, JAMES R. (1957)......Assistant in Chemistry
A.B., Pasadena College.

KAESTNER, PETER C. (1957)......Assistant in Physics
B.S., University of Nebraska.

KODIS, SAMUEL W. (1958)......Assistant in Mathematics
A.B., University of California; graduate study, San Diego State College.

LANGDON, FRANK H. (1958)......Assistant in Industrial Arts
A.B., San Diego State College.

LARSON, ROBIN L. (1957)......Assistant in Mathematics
A.B., San Diego State College.

LEAVY, JAMES F. (1958)......Assistant in Physics
A.B., San Diego State College.

MAINS, WILLIAM R. (1958)......Assistant in Mathematics
A.B., San Diego State College.

MICKELSON, NOEL K. (1958)......Assistant in Physical Education
A.B., San Diego State College.

MILLARD, MERLE M. (1958)......Assistant in Chemistry
B.S., University of California.

PERCY, JOSEPH L., JR. (1958)......Assistant in Physics

POOLE, JAMES R. (1958)......Assistant in Physical Education
A.B. and graduate study, San Diego State College.

RANDOLPH, DAVID F. (1957)......Assistant in Chemistry
B.A., Occidental College.

ROWBOTHAM, FRED L. (1958)......Assistant in Accounting
B.S., San Diego State College.

SNYDER, HENRY G. (1958)......Assistant in Zoology
A.B., San Diego State College.

SOLLID, ROBERTA B. (Mrs. K.) (1958)......Assistant in Physical Education
B.A., Stanford University; M.A., Montana State University.

STURAK, CARMAN C. (Mrs. J. T.) (1958) A.B., San Diego State College.	Assistant in Speech Arts
TAYLOR, WAYLAND P. (1958) A.B., San Diego State College.	Assistant in Microbiology
WAGGENER, HERBERT A. (1958) B.S., University of Missouri.	Assistant in Physics
WESTBERG, ROGER N. (1958) B.S., University of Illinois.	Assistant in Marketing
WHITEFIELD, RODNEY J. (1957) B.S., Washington State College.	Assistant in Physics
WILSON, FRANK M. (1957)	Assistant in Engineering

DIVISION OF AIR SCIENCE

WALKER, LLOYD A., JR., COLONEL (1956)	Chairman, Division of Air Science; Commander and Professor of Air Science
BROWN, CHARLES E., MAJOR (1958)	Assistant Professor of Air Science
BROWN, DONALD D., CAPTAIN (1958)	Assistant Professor of Air Science
DONNELLY, GEORGE W., MAJOR (1958)	Assistant Professor of Air Science
WILSON, IRVIN B., CAPTAIN (1955)	Assistant Professor of Air Science
DE CECCA, WILLIAM A., M/SGT. (1956)	Sgt. Major, First Sergeant
USTIC, JAMES P., T/SGT. (1958)	NCOIC Supply
WILSON, REGINALD R., T/SGT. (1958)	Training Aids
WRIGHT, ALDEN G., SR., T/SGT. (1957)	Cadet Records

RETIRED FACULTY

(Date following name indicates date of retirement)

HEPNER, WALTER R. (1952)	President Emeritus
AMSDEN, GEORGIA C. (1957)	Associate Professor of Business Education
ANDREWS, JULIA G. (1957)	Associate Professor of Art
BAIRD, OSCAR (1951)	Professor of Physics
BLAKE, DEAN (1952)	Lecturer in Meteorology
CORBETT, KATHERINE E. (1956)	Associate Professor of Education
DICKHAUT, FLORENCE SMITH (1952)	Professor of English
GERMANN, LULA (1956)	Supervising Librarian, Public Services
HAMMACK, EDITH CHASTAIN (1950)	Associate Professor of Education
HAMMACK, ISABELLA STEWART (1957)	Associate Professor of Education
JOHNSON, MYRTLE (1946)	Professor of Biology
LEONARD, CHARLES B. (1958)	Professor of History
MOLITOR, VINNIE CLARK (1938)	Associate Professor of Geography
PERRY, FAY V. (1953)	Professor of Sociology
PETERSON, CHARLES E. (1953)	Dean of Men; Professor of Physical Education
SKILLING, W. T. (1936)	Professor of Astronomy
SMITH, LEILA DEBORAH (1948)	Professor of Music
STOVALL, HARRIET B. (1954)	Senior Librarian
TANNER, JESSIE R. (1936)	Associate Professor of Physical Education
WALKER, HILDE KRAMER (1951)	Assistant Professor of German

MEDICAL STAFF

FRANK O. ROBERTSON, M.D.	Director of Health Service
C. CARROLL JONES, M.D.	Physician
JOHN J. KILLION, M.D.	Physician
OWEN W. E. NOWLIN, M.D.	Physician
ROBERT W. VANCE, M.D.	Physician
* JOSEPH C. BACON, M.D.	Physician
* HAROLD G. CARTER, M.D.	Physician
* HARNEY M. CORDUA, M.D.	Physician
* O. S. HARBAUGH, M.D.	Physician
* ROBERTS B. PAPPENFORT, M.D.	Physician

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* Serving part-time.

* CHARLES E. PRUETT, M.D.	Physician
* FRANCES E. WHITE, M.D.	Physician
MARGARET C. HOWARD, R.N.	Nurse
CONSTANCE LeCLERC, R.N.	Nurse
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